THE IRON TRADE REVIEW

Volume XLV CLEVELAND, NOVEMBER 4, 1909 Number 19

RECORD BREAKING

IN ACTUAL BUSINESS AND IN MANUFACTURING

Was a Feature of October—September's Blast Furnace Output Surpassed — Pig Iron Sales.

October was a record breaker in actual business done in iron and steel. During other periods of prosperity, contracting which was really little more than giving an option to buy was at a heavier rate, but during last month, the Steel Corporation companies and numerous independent interests booked for definite rolling the largest aggregate of tonnage of finished products ever recorded. Mills are falling farther behind in shipments, particularly in the smaller sizes of steel bars, and for this reason, quotations when made are often nominal. The natural consequence of the slow deliveries being made by the mills is an increased demand from jobbers' stocks, and prices from store have advanced sharply, the maximum quotations in some cities now being $4 per ton higher on bars and structural material than they were two or three weeks ago.

Pig Iron Production

The new high record for pig iron production established by September has been exceeded by 187,330 tons, the production for October being 2,565,985 tons, which is 206,295 tons more than was made in October, 1907, which month held the record until September, of this year. The Corporation's pig iron output during October was about 1,230,000 tons, compared with 1,157,370 tons in September. The ingot output of the Corporation in October was about 1,400,000 tons, compared with 1,302,074 tons in September, which was a record up to that time.

Iron Ore Conditions

In spite of a week of stormy weather, a new October record for ore shipments from the Lake Superior region has been made, the total being 6,600,000 tons, or nearly 200,000 tons more than the previous October record of 1907. Reservations for Bessemer ore are being rapidly made, and one interest reports that all of this grade that it can mine for next year has already been spoken for. Carrying charges have been advanced 10 cents per ton from all lake ports, and it is almost certain that the rates for next year will stand at this advance, or 75 cents from the head of the lakes; 70 cents from Marquette, and 60 cents from Escanaba. Eastern furnaces will not be able to obtain the large tonnage of Swedish ore which it was expected would be imported for next year, as the allotment will be only about 300,000 tons. Ocean freight rates are higher.

Malleable Improvement

Following the recent heavy ordering of equipment by railroads, the malleable iron business shows marked improvement. Some large orders for malleables have been placed, and malleable foundries have declined in some instances to make prices on full tonnages inquired for. It is understood that the malleables for Santa Fe cars will amount to fully 5,000 tons. An early advance in quotations on malleables is expected. Inquiries for malleable pig iron include 8,000 tons at Chicago, 1,500 tons to 3,000 tons at St. Louis, and 2,000 tons from an Ohio melter.

Pig Iron Sales

The heavy buying of Bessemer which characterized September has been followed by sales of at least 165,000 tons in the valley and Pittsburg territory in October. Basic sales from this territory are still light. The prices are low compared with prices of basic in other parts of the country and with the price of Bessemer. Sales of foundry grades include a round tonnage variously estimated to a Massillon pipe interest, and 4,500 tons to an air brake concern. The Massillon purchase clearly indicated that Alabama iron at present price levels can not compete with northern in Ohio territory. It is understood, however, that some Virginia iron was included in the Massillon purchase.

Finished Material

Some important orders for plates have recently been placed on a basis of 1.60c, Pittsburg, and eastern manufacturers are considering the advisability of advancing their quotations. Specifications for sheets are being received in large volume, and deliveries are improving, some makers being fully three months behind on blue annealed. Premiums are being paid in some cases for prompt delivery of tin plate. A number of manufacturers of iron pipe have advanced their prices $2 per ton. The demand for boiler tubes shows decided improvement. Active placing of orders for structural material for next year's direction is expected at an early date.

Crude Steel

Many inquiries for billets, slabs and sheet bars for next year's delivery are being received, but manufacturers are as a rule declining to make prices for such shipment. There is a scarcity of crude steel for the remainder of the year.

Railroad Buying

Buying by the railroads has have been so active during the past week as it was recently, but a large amount of business is being figured on. There is good demand for spikes, and the B. & O. is in the market for 20,000 kegs for future shipment. Rail orders of the week amounted to about 25,000 tons.

THE WEEK IN IRON CENTERS

PITTSBURG.

New Records in Actual Business—Heavy Selling of Bessemer Pig.

Office of THE IRON TRADE REVIEW,
510 Park Building, Nov. 2.

From the standpoint of orders for finished material in general, actually entered upon mill books for future rolling, the month of October reached a high mark for the revived iron and steel market and in this respect fixed a new record unit, to all appearances, for the future industry to draw its comparisons against. The Carnegie Steel Co. during the month booked for definite rolling the largest aggregate of tonnage of finished products, namely plates, structural shapes, bars, bar mill products, axles and wheels of any similar period of its entire history. Rails and semi-finished material are not included in this total. The orders represented were both specifications against running contracts and new business accompanied by positive instructions for manufacturing. Some departments of the company entered fully twice as much tonnage as they shipped.

Similar reports are made by leading independent steel-makers who now have accumulated upon their books, awaiting its turn with the mills, a tonnage greater in its aggregate than that during the most prosperous days of these companies in 1906 and 1907. The especially favorable feature of the situation in the eyes of all steel manufacturers at the present time is the fact that the total bookings are probably more completely genuine than ever before, in that there is a conspicuous smallness in the amount that may be rated as optional tonnage or that which may or may not be specified within the time limit of the contract according to the advantages to be derived from the fluctuations of the market or of the variable needs of the particular customer. Some important companies are enforcing definite and general policies against this method of contracting and are limiting accepted business to specific requirements or to contracts with definite specifications attached.

In connection with the great demand for finished material, it is reported by prominent coke makers that they have larger tonnages upon their books at present than at any time during the record pig iron production days of 1907. Some large operations are sold up solidly. In pig iron, the direct sales to consumers of Bessemer from furnaces in the Mahoning and Shenango valleys and the Pittsburg district during the month of October reached 165,500 tons.

The general tone of the iron and steel market continues of firmness and strength. The mills are so badly congested with orders that in extreme cases deliveries are six months behind. In the case of prices where spreads have been ruling, there are increasing instances to be noted of buying at the maximum quotations.

Iron Ore.—A Pittsburg ore interest reports an additional sale of 10,000 tons of Mesabi non-Bessemer ore for prompt shipment to an eastern furnace at schedule prices.

Pig Iron.—Additional heavy selling of Bessemer iron and a large transaction in foundry irons, considerable of which will be supplied from valley territory have been the conspicuous developments of the week in pig iron. In the immediate Pittsburg district the inquiry has not been heavy and sales of any of the grades have not been notable.

The purchase of 30,000 tons of Bessemer from the Bessemer Pig Iron Association by the Youngstown Sheet & Tube Co. at $19, valley, for first half, is the most forward transaction at the $19 price that has yet been made since the other important sales made at this level have confined the delivery period to first quarter. This company also took 10,000 tons of Bessemer from a valley merchant interest for shipment this year at $19, valley. Some small sales of Bessemer for prompt shipment have been made at $19.25, valley, and there are reports of higher prices having been done.

Total Bessemer transactions during October by furnaces in valley and Pittsburg territory to consumers direct reached 165,500 tons, including 54,000 tons to the Cambria Steel Co, 40,000 tons to the Youngstown Sheet & Tube Co., 20,000 tons to the Jones & Laughlin Steel Co., and 20,000 tons to the Republic Iron & Steel Co. The average Bessemer price for October was $18.78, valley, or $19.68, Pittsburg, compared with $17.43, valley, or $18.33, Pittsburg, in September. The basic sales from Pittsburg and valley territory in October were light, and the average price was $16.94, valley, or $17.84, Pittsburg, compared with $15.90, valley, or $16.80, Pittsburg, in September. By reason of the light interest locally, the possibilities of the basic market are indefinite, but it is believed that a $17.25, valley, furnace price is the absolute minimum. A late sale reported from St. Louis territory is 15,000 tons for first half to be supplied by a southern maker at $15, Birmingham.

The Massillon Iron & Steel Co., Massillon, O., is understood to have closed for the entire lot asked for in its inquiry of 36,000 tons of foundry iron for first half, and to have taken practically all northern iron on a basis of $17.50, valley, for the No. 2, $17, valley, for the No. 3, and $16.50, valley, for the No. 4. The iron was distributed among a number of different sellers. There has been considerable buying of gray forge in this territory during the past few days, and an aggregate of about 4,000 tons for delivery over this year and first quarter at $16.50, valley, has been closed. A sale of 300 tons of No. 2 foundry for first half at $17.75, valley, is reported along with other lots which were taken at $17.50, valley. A local buyer in the week closed for 600 tons of low phosphorus iron at about $22.75, delivered, and this market for prompt and future shipment is quoted at from $22.50 to $22.75, Pittsburg. A sale of 3,000 tons for first half by eastern furnaces to users in that territory is also noted. On prompt iron for shipment over the first quarter we quote as follows:

Bessemer, valley	$ 19.00
Bessemer, Pittsburg	19.90
No. 2 foundry, Pittsburg	18.15 to 18.40
Gray forge, Pittsburg	17.40
Basic, valley	17.25 to 17.50
Basic, Pittsburg	18.15 to 18.40

Ferro-Alloys. — Increased activity among buyers of ferro-manganese in Pittsburg and nearby territory has featured the market during the past week, coincident with the greater strength in the prices of this material. There are reports current that heavy consumers in this district are buying or are about to buy large blocks and this development appears in line with conditions. There has been, however, considerable buying by other users. A steel company closed for 1,000 tons for last half of next year and is reported to have shaded $45, seaboard. A valley user took 500 to 600 tons for quick shipment and another company bought a small lot for first

quarter. The market is unquestionably stronger in price despite the fact that low selling does not seem to have been wholly eliminated and advances are predicted. Some importers are asking $45 for this year, $46 for first half, and $47 for second half. The other alloys are quiet but firm.

We quote ferro-manganese at from $44 to $44.50, Baltimore, prompt shipment, or for delivery this year and the first half of 1910, $44.50 to $45.50, Baltimore, or $45.50 to $46.50 for second half. The freight from Baltimore to Pittsburg is $1.95.

Fifty per cent ferro-silicon is quoted at $64 to $65, Pittsburg; domestic 12 per cent, $25; 11 per cent, $25; 10 per cent, $24, Pittsburg, for prompt with $1 advance for first quarter and $2 for first half. The foreign grades are held at anvanced prices.

Plates.—Large buyers of plates who have recently come into the market for forward requirements have closed on a basis of 1.60c, Pittsburg, and though the range of prices still continues from 1.50c to 1.60c, the lower figure is quite exceptional, and it is not likely that makers generally would accept less than 1.55c. Other sales at 1.60c are reported. The plate market is in a very strong state with specifications taxing mill capacities and with deferred deliveries of leading makers running into months. Prospects of continued heavy car buying are very promising, and this construction will provide a demand for an enormous tonnage of steel. A late car order is that for 500 all-steel freight cars placed by the Pittsburg, Shawmut & Northern with the American Car & Foundry Co. We quote present plate prices as follows:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.50c to 1.60c. Extras are as follows per 100 pounds: Boiler and flange steel plate, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edge, 0.10c; under 3/16 to and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—The makers of sheets who have been actively selling for first quarter shipment have booked heavily, but the contracting movement is now less noticeable, as many consumers have covered. Specifications are being received in a large volume and there is little likelihood of any improvement in deliveries, which are considerably extended. Blue annealed sheets continue much in demand and shipments with some makers are fully three months behind. Some of the independent sheet makers are still very conservative in accepting business for delivery after the first of the year. There are reports of price advances having been made by independent companies, but these cannot be established. We quote the present schedule of prices as follows:

Blue annealed sheets, Nos. 3 to 8, 1.65c; Nos. 9 to 10, 1.70c; Nos. 11 and 12, 1.75c; Nos. 13 and 14, 1.80c; Nos. 15 and 16, 1.90c; box annealed sheets, Nos. 10 to 12, 1.95c; Nos. 13 and 14, 2.00c to 2.05c; Nos. 15 and 16, 2.05c to 2.10c; Nos. 17 to 21, 2.10c to 2.15c; Nos. 22 to 24, 2.15c to 2.20c; Nos. 25 and 26, 2.20c to 2.25c; No. 27, 2.25c to 2.30c; No. 28, 2.30c to 2.35c; No. 29, 2.35c to 2.40c; No. 30, 2.45c to 2.50c; galvanized sheets, Nos. 13 and 14, 2.35c to 2.40c; Nos. 15 and 16, 2.45c to 2.50c; Nos. 17 to 21, 2.55c to 2.60c; Nos. 22 to 24, 2.70c to 2.75c; Nos. 25 and 26, 2.90c to 2.95c; No. 27, 3.10c to 3.15c; No. 28, 3.30c to 3.35c; No. 29, 3.45c to 3.50c; No. 30, 3.70c to 3.75c; painted roofing sheets, $1.60c per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing sheets, $2.85 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—With no unsold plate to be offered this year by principal makers and with deliveries running several months behind, there is some premium business going in the market to those mills which can furnish quick delivery. This extra is reported to be 10 cents a box or $2 a ton in some cases. New buying in tin plate is not so heavy, but a number of the leading makers have contracted freely with their trade for first quarter and have their books well filled. Specifications against contracts are very liberal. We quote the present market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.50 f. o. b. mill, Pittsburg district.

Rails and Track Material.—Comparatively small sales in standard sections for quick shipment continue to be made by the local maker, but the outlook for some important buying by eastern roads for next year is quite promising. Light rail buying is active and prices continue to harden. The Carnegie Steel Co. the past week entered about 2,200 tons. There is an active inquiry for standard spikes and the Baltimore & Ohio railroad is still in the market for a lot of 20,000 kegs for future shipment. It is reported that standard spikes have sold at 1.75c for first half, but some makers will not accept these prices. There are also reports of low prices on small spikes. We quote the market on Bessemer rails as follows, the base price for open-hearth rails being $30, mill:

Fifty-pound and heavier, 500-ton and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails on base weight of 40 to 45 pounds, $28, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; standard spikes, 1.70c to 1.75c, Pittsburg; hand spikes, 1.75c to 1.80c, Pittsburg.

Steel.—Although the principal sellers of semi-finished steel are flooded with inquiries for billets, slabs and sheet bars for next year's delivery, they are still withholding action on prices for such shipment. Users are also having considerable difficulty to get steel for the remainder of this year except through odd lots in middlemen's hands and from a few mills. Sales within the week of Bessemer sheet bars for shipment this year are reported at $28.50, Pittsburg. Quotations on billets are largely nominal as few sales are reported.

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $26 to $26.50, Pittsburg, with the usual extras for size and analysis, and open-hearth rolling billets from $26.50 to $27, Pittsburg. Forging billets are held at $29 to $30, Pittsburg. Sheet and tin bars are quoted at $28 to $29, Pittsburg.

Hoops and Bands.—The mills of leading hoop makers are scarcely more than in a comfortable position and capacities are not so engaged as to prevent reasonably prompt shipments being made. The market is showing improvement, however, and some mills are asking $1 advance over present maximum prices to buyers outside the regular trade. The band business is running heavily with bars. We quote the market as follows:

Hoops in carload lots, 1.50c to 1.60c; in less than carload lots, 1.60c to 1.70c; bands, 1.40c to 1.50c, base, with net extras as per standard steel.

Merchant Bars.—The sold-up condi-

tion of the steel bar mills is no easier and, if anything, deliveries appear to be getting worse, as specifications are running strongly. It is not unusual to find that on the small and special sizes of bars, mill schedules are filled from 22 to 25 weeks ahead, while on the standard bar products deliveries are being made in from six to ten weeks. Shipments in the shorter period of this range are by those mills which have been especially conservative in selling into next year. The main forward buying is for first quarter, but there are increasing instances of it having been done over first half. The 1.40c price is now quite exceptional, but is still to be noted in western and southwestern districts. The 1.45c level appears the average. Some makers are not disposed to contract with the jobbing trade for forward material at this time. Bar iron for first quarter has sold in this district at 1.75c, Pittsburg, or a $1 advance over the current maximum price. The market shows a good tone and a number of buyers, including the railroads, are attempting to contract for extended periods. The shafting demand is good and discounts are reported to be firmly observed. We quote the present market as follows:

Common iron bars, 1.65c to 1.70c, Pittsburg; Bessemer and open-hearth steel bars, 1.40c to 1.50c; plow and cultivator, 1.40c to 1.50c; channels, angles, zees, tees, under 3-inch, 1.50c to 1.55c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.15c advance; less than 1,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 57 per cent in carloads and 52 percent in less than carloads, delivered in base territory. Two points advance are asked into next year.

Planished and machine straightened tire is 1.60c base; iron finished tire under 1½ by 1½ inches, 1.55c, both plus net extra on tire card; iron finished tire, 1½ by ½ and over, 1.40c, plus net extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100-inch and thicker, we quote base prices for 100 pounds, $3.20 on hard, and $3.45 on soft, except in carload lots of one size where the price is lower.

Structural Material.—The mills are so far behind in their shipments of structural shapes that some fabricators are unable to make promises of delivery under four months' time. Along with plates, plain structural material is being specified very heavily and some notable records of orders entered are being made, so that mill capacities are taxed to the limit. This condition is expected to bring out at an early date inquiry on next year's building work, which it is desired to start at the onset of the construction season. It is believed that by the end of the present month or early in December this future work will begin to manifest itself. The present inquiry on new work is light. The bids taken for the steel bridge to be erected across the Ohio river at Wheeling by the Wheeling, Benwood & Bellaire Bridge Co., calling for 3,300 tons, have been rejected, and the project will probably be refinanced. Bids have gone in on 350 tons for a club house for the Twentieth Century club of this city. The American Bridge Co. has taken 175 tons for a new dining hall at the Dixmont state hospital. Shape prices are very strong and though the spread is from 1.50c to 1.60c, the former quotation is not being freely made. We quote shape prices as follows:

Beams and channels, 15-inch and under, 1.50c to 1.60c; over 15 inches, 1.60c to 1.70c; zees, 1.50c to 1.60c; tees, 1.50c to 1.60c; angles, from 3 to 6 inches, 1.50c to 1.60c; over 6 inches, 1.60c to 1.70c; universal and sheared plates, 6¼ inches wide and wider, 1.50c to 1.60c.

Merchant Pipe.—A number of the leading manufacturers of iron pipe this week advanced their prices one point or $2 a ton to a new minimum discount of 74 and 5. One maker who is usually in advance of the market has been asking this price for several weeks. The mills manufacturing iron pipe are in strong positions with respect to orders booked. The steel pipe situation continues very satisfactory to makers and current new business and specifications are favorable. It is stated by makers that no pipe contracts into next year have yet been taken. Some of the mills are selling for only 30 days ahead. The Manufacturers' Light & Heat Co. has bought four miles of 6-inch steel line and is still in the market for five miles of 12-inch. We quote the following official discounts on merchant pipe subject to an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch	71	53	65	..
⅜ inch	72	58	66	52
½ inch	75	63	69	57
¾ to 6 inch	79	69	73	63
7 to 12 inch	74	59	68	51
PLUGGED AND REAMED.				
1 to 4 inch	77	67	71	61
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	64	52	59	47
½ to 4 inch.....	71	59	56	54
4½ to 8 inch.....	67	55	62	50
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inch.....	60	49	55	44

Boiler Tubes.—The contract for the charcoal iron tubes for an additional lot of 50 consolidated freight locomotives for the Baltimore & Ohio railroad has been awarded to Spang, Chalfant & Co., Inc., Pittsburg. With this order, the Spang, Chalfant company will supply iron tubes for a total of 110 locomotives recently ordered by this railroad. The tube market is now in good condition and some makers of iron tubes have more business booked than at any previous date in their history, so that they are unable to make deliveries promptly. We quote the following official discounts on lap-welded steel boiler tubes to jobbers in carloads:

1 to 1½ inch.....	49
1¾ to 2¼ inch.....	61
2½ inch	63
2¾ to 5 inch	69
6 to 13 inch	60

2½ inch and smaller, over 18 feet, 10 per cent net extra.
2¾ inch and larger, over 22 feet, 10 per cent net extra.

To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

We quote the following official discounts on charcoal iron tubes to jobbers:

1 to 1½ inch	43
1¾ to 2¼ inch.....	43
2½ inch	48
2¾ to 5 inch.....	55
6 to 13 inch.....	43

Wire Products.—Independent manufacturers have followed the leading interest in accepting contracts for common wire products for first quarter, and in some instances for first half at 1.70c, Pittsburg, or an advance of $2 a ton. The forward contracting at this price is now being done principally by the manufacturing trade, for there has been no general policy formulated as to selling the jobbing trade into next year. Some makers are able to give quick shipment on nails, but are badly in arrears in deliveries on manufacturing wire, in which specifications are heavy. We quote the prices on wire products for this year's shipment as follows:

Wire nails, jobbers' carload lots, $1.80; retailers' carload lots, $1.85; painted barb wire, jobbers' carload lots, $1.80; retailers' carload lots, $1.85, with 30c for galvanizing; plain wire to jobbers in carloads, $1.60, and to retailers in carloads, $1.65; polished staples, $1.80; galvanized staples, $2.10.

Wire Rods.—Buyers who have not already covered on their rod requirements are having considerable trouble to obtain material, and some export business in chain rods has been offered in this district this week. Quoted prices are largely nominal,

as higher levels have been paid by consumers outside regular customers. We quote, nominally, Bessemer and open-hearth rods at from $33 to $34, Pittsburg.

Coke.—An eastern furnace has closed a contract for 5,000 tons monthly of Connellsville coke for delivery over all of 1910. Other negotiations are under way, as there is still a number of large interests which have yet to cover for their needs. Some of these consumers are showing more interest in the market and operators are bullish over the prospects. Spot coke is strong, a sale of 2,000 tons at $2.85, ovens, being noted, and in some quarters it is believed that this market is likely to score further advances soon. Large furnace coke distributers have made heavy bookings which exceed those of the active days of 1907, and are now shipping an enormous tonnage. Foundry coke specifications are also very heavy and makers are having difficulty to distribute their tonnage where it is most needed, as there is a disposition among some consumers to order beyond actual requirements. Shippers are unable to secure a sufficient supply of box cars for their needs and racks are being freely used as there appears to be an adequate number of the latter available with most railroads. We quote spot furnace coke at from $2.75 to $2.85, ovens, and on contract from $2.85 to $3, ovens. On first class Connellsville foundry coke, we quote at from $3.15 to $3.25, ovens, for prompt and from $3.25 to $3.50, ovens, on contract. Production in the Connellsville regions for the week ending Oct. 23 shows 34,500 ovens active with an output of 442,326 tons, according to the Connellsville *Courier*, compared with 34,122 ovens and 428,313 tons the preceding week.

Old Material.—With the exception of borings and turnings in which there has been a break in prices, the old material market is stationary with a freer condition prevailing in offering by dealers. It is interesting to note that the break in borings and turnings was brought about by a comparatively small lot of speculative tonnage which had been shipped to a consumer's plant in this district by the purchaser in the expectation that the former would accept it at the ruling prices. The user declined the offer and the dealer, being forced to move the shipment, sold out under what appeared to be a strong market. In heavy steel $18, delivered, is the highest that some melters will pay for any sizeable lots and many of them will not accept this quotation. There are reports that sales have been put through in which the $18 price has been considerably shaded. Wrought scrap is strong and $19.50 is expected to be realized on an accumulation of 700 tons which the Pennsylvania lines west are closing out this week. The mills report that $22.75, delivered, has been paid for low phosphorus scrap. Desirable cast is moving well at quoted prices as the supply of this grade appears limited. The Pennsylvania Railroad Co. is offering its October list for bids Nov. 9. We quote gross tons delivered in the Pittsburg district, including Monessen, Sharon, Brackenridge, Steubenville and Follansbee, as follows:

Heavy melting scrap	$18.00 to 18.50
Rerolling rails	19.00 to 19.50
Bundled sheet scrap	16.00 to 16.50
Iron axles	27.50 to 28.00
Old iron rails	20.00 to 21.00
No. 1 wrought scrap	19.25 to 19.50
Old car wheels	18.50 to 19.00
Low phosphorus	21.50 to 22.50
Machine shop turnings	13.50 to 14.00
Cast borings	11.00 to 11.50
No. 1 cast scrap	17.00 to 17.50
Malleable	16.50 to 17.00
Stove plate	13.50 to 14.00

CHICAGO.

Iron and Steel Markets Strong, but Buying Is Not Very Active.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Nov. 2.

The iron and steel market maintains its strong tone, although there is not the same snap to the buying that there has been earlier in the movement. At the same time, there is a quiet, heavy business being done and this is responsible for the manner in which prices have been maintained and for the advances which are recorded in several lines, this week. Pig iron production moves along on about the same level as for some weeks, and other lines are getting out a heavy tonnage. One of the local steel manufacturers—the Inland Steel Co.—is about to increase its open-hearth capacity by the erection of two additional 60-ton furnaces A survey of the local territory, and of the entire field, gives the impression that the present rate of production and consumption will be maintained, and it is the conviction of many that the maximum volume of business has not been reached, nor the top notch of prices. Higher prices for bars, especially, are confidently expected. This confidence would seem not to be misplaced, when it is considered what a radical increase in the consumption of steel bars has been brought about by the growing introduction of concrete in the construction of modern buildings. This use of concrete will increase more and more and the present increase in steel consumption from this source, which at present amounts approximately to 33 1/3 per cent, will be looked upon as being only a beginning. The railroads are buying heavily, but they have not as yet placed nearly the tonnage which their requirements will call for. The coke situation is about the same as at last report, both as to prices and the scarcity of cars. Connellsville coke is quoted at from $3.00 to $3.25, ovens, and there is some tendency to hold for $3.50, for next year's delivery. By-product foundry coke is still held at $6.10, delivered, Chicago.

Pig Iron.—Some very good inquiries are in the market for pig iron, this week, among which are inquiries for 8,000 tons of malleable. Sales have come to a very fair total, made up, for the most part, of small lots, but one contract, which has been hanging fire for two or three weeks, finally has been disposed of, the balance of the business, amounting to about 8,500 tons of foundry iron, having been closed within the past few days. The tendency on the part of melters to get their requisitions on file in the offices of the furnace companies is still apparent, and comparatively little iron remains on the books which has not some shipping instructions attached to it. The furnaces are in about the same condition of activity as at last report, and production is expected to be maintained at the present rate, and will be expanded rather than contracted in the near future, when some of the idle stacks resume, of which there is a very small number in the Chicago territory. The price of Lake Superior charcoal, for this year's shipment, remains unchanged at $19.50, with a very good volume of business moving, while the price for first quarter of 1910 is $20.00, and for second quarter, $20.50.

We quote for the remainder of this year, with the exception noted above, as follows:

Lake Superior charcoal	$20.00 to 20.50
Northern foundry No. 2	19.00 to 19.50
Southern foundry No. 2	19.35
Southern silveries, 5 per cent silicon	20.35 to 20.85
Jackson Co. silveries, 8 per cent.	21.40
Malleable Bessemer	19.50 to 20.00
Alabama basic	19.35 to 19.85

Billets.—The situation as regards the billet market shows no change, and Chicago may still be considered out of the market as a producer of billets, except such as are consumed in the makers' own plants. Forging billets are being taken in about the same quantities as heretofore, by the same purchasers and from the same sellers.

Merchant Bars.—The finished material market is showing a large de-

gree of strength and there is no diminution in the interest taken in the future of the market by the consuming interests. Prices are on the upward trend, both from mill and from store. Some sales of iron bars are reported to have been made at as high as 1.60c and 1.65c, Chicago. Warehouse business shows no sign of decrease.

We quote for Chicago delivery, as follows with prevailing extras:

Bar iron, 1.55c to 1.60c; hard steel bars, 1.50c to 1.55c; soft steel bars and bands, and light sections, 1.58c to 1.68c; soft steel angles, less than 3 x 3, 1.68c to 1.78c; hoops, 1.68c to 1.78c; planished or smooth finished tire steel, 1.83c to 1.88c; iron finish, up to 1½ x 1½ inch, 1.78c, base, tire card; iron finish, 1½ x ½ inch and larger, 1.63c to 1.68c base, steel card; channel for solid rubber tires, ¾ to 1 inch, 2.13c to 2.18c; and 1⅛ inch and larger, 2.03c to 2.08c; smooth finished machinery steel 1 inch and larger, 2.43c; flat sleigh shoe, 1.73c, toe calk steel, 2.23c; spring steel, 2.28c; crucible spring steel, 2.78c; tool steel, 7c to 9c, with higher prices for special grades. Quotations on shafting are 57 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote, as follows: Bar iron, 2.00c to 2.10c, base plus new extras; soft steel bars, 1.90c to 2.00c per 100 pounds base, plus new extras; soft steel hoops, 2.40c to 2.50c, full extras.

Structural Material.—A large volume of business coming in to the mills in the shape of specifications, and an advance in prices of $2.00 per ton made by interests not connected with the Steel Corporation, have been the features of the week. Store prices have moved up a few points, as well as mill prices. There is a very large amount of new construction work which is about to be closed, and the contracts will be let in a few days. One contract of 100 tons, for the Bohemian Club, of San Francisco, is reported. It was taken by the Central Iron Works, of the same city.

We quote mill prices for structural shapes, Chicago delivery, as follows:

Beams and channels, 15-inch and under 1.78c to 1.88c. For extras see Pittsburg report.

Local store prices are as follows: All angles, 3 inches and larger, including 6 inches, $2.00 to $2.10 per 100 pounds; angles over 6 inches, $2.10 to $2.20 per 100 pounds base; beams, 3 to 15 inches, inclusive, $2.00 per 100 pounds base; channels, 3 inches and larger, $2.00 per 100 pounds, base.

Rails and Track Supplies.—Rail orders in fair volume continue to come in, and the local interest booked about 25,00 tons in the past week, about two-thirds of which were Bessemer. The largest sale to one road was 10,000 tons. The mills are full of orders for rail joints and other track fastenings.

See Pittsburg report for prices on standard sections.

On light rails, Chicago delivery, we quote as follows: Light rails, 40 and 45-pound, $26.00; 30 and 35-pound, $26.75; 16, 20 and 25-pound, $27; 12-pound, $28. In lots of 250 to 500 tons a reduction of 60c a ton from these prices is made; lots of 500 tons and up carry a reduction of $1 a ton. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.80c to 1.90c; smaller size spikes, 1.85c to 1.90c base; track bolts with square nuts, 2.25c to 2.50c, base; with hexagon nuts, 2.40c to 2.65c.

Plates.—An advance in mill and store prices of $2.00 per ton has been made. The market is very strong. The advance was made by interests outside of the Steel corporation. Business from store is as heavy or heavier than ever, and the mills are receiving specifications very freely on previous orders.

We quote, Chicago delivery, as follows: Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.78c to 1.88c. For extras see Pittsburg report.

Store quotations are without change, as follows: Tank steel, ¼-inch and heavier up to 72 inches wide, 2.00c to 2.10c, from 72 inches wide to 95 inches wide, 2.10c to 2.20c; 3/16-inch up to and including 60 inches wide, 2.10c to 2.20c; 72 inches 2.35c to 2.45c; No. 8 up to 60 inches wide, 2.15c to 2.25c. Flange and head quality, 25c extra.

Sheets.—There has been some talk of an impending advance of $4.00 per ton on sheets, but this has not been confirmed. It is known that the local interest is averse to quoting on galvanized sheets, at ruling prices, for next year's delivery, on account of the unusually high prices prevailing for spelter. The Inland Steel Co.'s shipments for the month of October were the largest in any one month in the history of the company.

For mill prices see Pittsburg report, freight to Chicago, 18 cents.

We quote store prices at Chicago as follows: No. 10, 2.20c to 2.30c; No. 12, 2.25c to 2.35c; No. 14, 2.30c to 2.40c; No. 16, 2.40c to 2.50c; Nos. 18-20, 2.65c to 2.75c; Nos. 22-24, 2.70c to 2.80c; No. 26, 2.75c to 2.85c; No. 27, 2.80c to 2.90c; No. 28, 2.90c to 3c; No. 30, 3.15c; galvanized sheets, Nos. 10 and 16, 3c to 3.10c; Nos. 18 and 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.40c; No. 26, 3.50c to 3.60c; No. 27, 3.70c to 3.80c; No. 28, 3.90c to 4c; No. 30, 4.30c to 4.40c.

Wire Products.—Every branch of business from which contracts for wire come seems to be contributing its share of trade at this time, and the total is a satisfactorily large one. Prices as previously quoted are being maintained.

We quote, Chicago delivery, for the remainder of this year, as follows:

Wire nails, jobbers' carload lots, $1.98; retailers' carload lots, $2.03; retailers' less than carload lots, $2.13; painted barb wire, jobbers' carload lots, $1.98; retailers' carload lots, $2.03; retailers' less than carload lots, $2.13; with 30c for galvanizing; plain wire to jobbers, carload lots, $1.78; staples, bright, $1.98.

Merchant Pipe and Tubes.—Only the usual routine character of business is reported from this market, with the amount of business originating in this territory on about the same level as for several weeks.

For mill discounts, see Pittsburg report.

We quote, out of store, as follows: Wrought steel pipe, black, ⅛-inch to ¼-inch, 68 per cent; ⅜-inch, 69 per cent; ½-inch, 72 per cent; ¾-inch to 6-inch, 76 per cent; 7-inch to 12-inch, 71 per cent. Iron pipe about 6 points higher.

Lap-welded steel tubes, 2¼-inch to 5-inch, 60 to 62 per cent; charcoal iron tubes, 2¼-inch to 4-inch, 48 to 50 per cent; seamless steel tubes, 2¼-inch to 4-inch, 47½ per cent.

Cast Iron Pipe.—There is a good inquiry in this line, a number of municipalities figuring on their requirements. The United States Cast Iron Pipe & Foundry Co. recently closed contracts for approximately 20,000 tons of gas main pipe to gas companies, the larger part of which was taken by the People's Gas Light & Coke Co., of Chicago. Routine contracts are of good number and volume, and prices are firm.

We quote as follows: 4-inch water pipe, $28.50; 6 to 14 inches, $27.50; larger sizes, $26.50; gas pipe, $1 a ton higher.

Old Material.—With the market somewhat in the same condition of apathy as last week, there is no decided change in the attitude of sellers toward the market. The present lull is looked upon as a merely temporary

phase which was to be expected, and a recovery of what little ground has been lost is considered a certainty. The Chicago & Northwestern railway has a list of scrap in the market, amounting to about 3,000 tons, which will close today. About 1,200 tons of this is old steel rails, 5 feet and over, and the balance is well distributed over the various forms of scrap iron and steel. The Chicago, Milwaukee & St. Paul railway has a list of over 2,300 tons, which will close Friday, Nov. 5. Prices are practically unchanged.

We quote, gross tons, as follows:

Old car wheels	$18.00 to 18.50
Old iron rails	20.50 to 21.50
Rerolling rails (4 ft. and over)	18.00 to 18.50
Old steel rails (2 ft. and under)	17.50 to 18.00
Light section relayers, 45 lbs. and under subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	23.50 to 24.50
Frogs, switches and guards	16.25 to 16.75
Heavy melting steel	16.00 to 16.50
Shoveling steel	15.50 to 16.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$15.50 to 16.00
No. 2 R. R. wrought	14.50 to 15.00
Arch bars and transoms	18.00 to 18.50
Knuckles, couplers and springs	15.00 to 15.50
Shafting	17.50 to 18.00
Iron car axles	21.50 to 22.00
Steel car axles	20.50 to 21.00
Locomotive tires	18.00 to 18.50
Dealers' forge	13.25 to 13.75
Pipes and flues	12.25 to 12.50
No. 1 cast, 150 lbs. and less	15.00 to 15.50
No. 1 busheling	13.50 to 14.00
No. 2 busheling	10.00 to 10.50
No. 1 boiler cut	11.50 to 12.00
Boiler punchings	14.50 to 15.00
Cast and mixed borings	7.50 to 8.00
Machine shop turnings	11.00 to 11.50
Railroad malleable	15.00 to 15.50
Agricultural malleable	13.00 to 13.50
Stove plate and light cast scrap	12.75 to 13.25
Angle bars, splices, etc. (iron)	18.00 to 18.50
Angle bars, steel	16.00 to 16.50

PHILADELPHIA.

More Active Demand for Prompt Delivery—The Basic Furnace Situation.

Nov. 3.

Pig Iron.—The month opens with the local market somewhat less active, though continuing the firm tone which characterized the situation all through October. Current selling is noteworthy in that a good part is for prompt delivery, some important tonnages for the remainder of the year being included in the transactions of the past week. The leading Virginia interest disposed of 5,000 tons of basic on a basis of $19, delivered into this territory, and then withdrew from the market on steel-making irons; it is likely that one of the Crozier furnaces will blow in on basic at an early date. There has been no further selling of eastern Pennsylvania basic, but the price is firm at $19, delivered, and the scarcity of the metal has been somewhat aggravated by the banking of Oxford furnace for a few days while new cast, stock and hoist houses can be built to replace those destroyed by fire. It is announced that the Tidewater furnace, with an annual capacity of 70,000 tons, will be started on basic by the first of the year. Low phosphorus iron continues extremely firm. It develops that, in addition to the iron purchased from a furnace interest in this district, the Burnham consumer took 3,000 tons from the northern New York producer, delivery to begin with January, at full prices. The latter interest also sold 1,000 tons to another melter at a slight advance. Nothing further is heard of importations, although charter records include the steamers Ormidale, Middlesboro and Rotterdam to Baltimore, pig iron, at 6 shillings. October sales were generally very heavy; with one large interest the business for the month was next to the largest in its history. We quote, delivery at eastern Pennsylvania points over the next five months, as follows:

No. 1X foundry	$19.50 to 20.25
No. 2X foundry	19.00 to 19.75
No. 2 plain	18.50 to 19.25
Standard gray forge	17.75 to 18.25
Basic	19.00
Low phosphorus	22.50
No. 2 Birmingham	19.50 to 20.00
No. 2X Virginia	19.00 to 19.50
No. 2 plain Virginia	18.50 to 19.00

Finished Material.—Excepting the district south along the coast, the structural steel market is decidedly quiet. That section, however, has developed some important contracts, including the Fidelity building, Baltimore, which went to the Baltimore Bridge Works; the 3,000 tons of steel required will be supplied by the Bethlehem Steel Co. It is also probable that a Baltimore structural interest will secure the car shop building for the Harlan & Hollingsworth Corporation at Wilmington; out of the 600 tons of steel required, about 350 tons will be Bethlehem sections. About 150 tons of the latter will be used in a garage for the White Automobile Co., Baltimore. With several of the independent companies, October was a record-breaker in point of production. Mills generally are so well filled that selling representatives are referring all inquiries before quoting, and only old customers are being accommodated on their first quarter needs. Billets continue scarce and command higher prices. We quote, Philadelphia delivery, as follows: Structural shapes and plates, 1.70c to 1.85c; steel bars, 1.60c to 1.70c; sheets, No. 18 to 20, 2.50c; refined bar iron, 1.60c to 1.70c.

Old Materials.—There is every reason to believe that the joint buying arrangement, the initial term of which is about to expire, will be renewed. Those mills which are parties to the arrangement appear well satisfied with its operations, particularly in steadying prices and handling the supply so as to avoid shortages on the one hand and embargoes on the other, while the opposition seems less aggressive. Shipments are still being diverted to Coatesville from Conshohocken, Steelton, Bethlehem and Pottsville, the last-named point stating that no scrap is wanted this year. The association price continues at $18, which is both the maximum and minimum on good lots of desirable material. The treasury ruling on the Winnie cargo has left the scrap duty situation in a fog. We quote, gross tons, delivery at consuming points in eastern Pennsylvania, as follows:

Old steel rails (rerolling)	$19.25 to 19.75
No. 1 steel scrap	18.00 to 18.50
Old steel axles	24.00 to 24.50
Old iron axles	29.00 to 30.00
Old iron rails	21.00 to 22.00
Old car wheels	17.50 to 18.00
Choice scrap R. R. No. 1 wrought.	21.00 to 21.50
No. 1 yard scrap	19.00 to 19.50
Machinery scrap	17.00 to 17.50
Low phosphorus scrap	22.00 to 22.50
Wrought iron pipe	17.25 to 17.75
No. 1 forge fire scrap	16.50 to 17.00
No. 2 forge fire scrap, ordinary.	9.50 to 10.00
Wrought turnings	15.00 to 15.50
Axle turnings, heavy	16.50 to 17.00
Cast borings	13.25 to 13.75
Stove plate	14.50 to 15.00

CLEVELAND.

Furnaces Eager to Make Reservations of Bessemer Ore.

Office of THE IRON TRADE REVIEW,
Browning Bldg., Nov. 2.

Iron Ore.—Furnaces are already showing considerable eagerness to make reservations for Bessemer ores, and one interest reports that all the Bessemer ore it can mine next year has been spoken for. Prices have not yet been formally made, and there is a disposition to delay doing so until about Dec. 1, but it is generally conceded that there will be an advance of 50 cents. On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The market is quiet, but prices are firm. There is considerable inquiry for basic. The only large sale of foundry grades is to a Massillon pipe interest. While it was announced that 36,000 tons were purchased of northern No. 3 and No. 4, by that interest, there is a disposition in some quarters to question whether the tonnage was actually that large. The Youngstown Sheet & Tube Co. purchased 30,000 tons of Bessemer from the Bessemer Pig Iron Association at $19, valley, delivery to begin in November and extend to July 1, and 10,000 tons from a valley merchant interest at $19. While small lots have

been sold at $19.25, there is a strong influence in favor of holding the price to $19. The Steel Corporation has not yet purchased, and may not do so for some time, although it is well known that its needs are urgent. We quote for prompt delivery in Cleveland as follows:

No. 1 foundry	$ 18.75
No. 2 foundry	18.25
No. 3 foundry	17.75
No. 2 southern	18.85 to 19.35
Gray forge	17.40 to 17.65
Bessemer	19.90
Lake Superior charcoal	19.50 to 20.00
Jackson Co. 8 per cent silvery	20.55

Coke.—The market for both foundry and furnace coke is very quiet, but quotations are firmly maintained. On foundry coke we quote for first half delivery $3.25 to $3.50, and for prompt delivery $3 to $3.25. We quote Connellsville furnace coke for prompt delivery at $2.75 to $2.90, and for first half delivery, $2.90 to $3.00.

Finished Material.—Mills are now so far behind on deliveries that they are slow to quote, and when they do name prices, they are to a large extent nominal. Some important interests are from five to six months behind on deliveries of steel bars. Deliveries are very slow on plates and shapes. Some interests are able to give fairly good delivery on structural material.

Prices of jobbers out of stock are being sharply advanced, the maximum quotations now being 2c on structural material, and 1.90c on bars. Bar iron has shown considerable improvement, and the nominal quotation of Cleveland mills has been advanced to 1.70c, Cleveland, but it is not probable that any business could be done at this price.

Old Material. — Quotations are 25c to 50c lower on some items, while others are merely nominal. The market is decidedly weak; foundries are not buying malleable and not much cast scrap is offered or wanted. Mills continue to refuse to quote. Large amounts of mixed scrap have accumulated and are being held on track by dealers. We quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$21.00 to 21.50
Old steel rails (under 6 feet)	17.50 to 18.00
Old car wheels	18.50 to 19.00
Old steel boiler plate	14.00 to 14.50
Malleable iron (railroad)	18.00 to 18.50
Steel axles	19.50 to 20.00
Malleable iron (agricultural)	16.00 to 16.50
Heavy steel	16.25 to 16.75
Country mixed steel	14.00 to 14.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$17.00 to 17.50
No. 1 busheling	14.25 to 14.75
No. 1 machine cast	15.00 to 15.50
Axle turnings	11.50 to 12.00
Machine shop turnings	11.00 to 11.50
Grate bars	12.50 to 13.00
Pipes and flues	12.50 to 13.00
Tank iron	12.00 to 12.50
Sheet iron	7.00 to 7.50
Wrought drilling	11.00 to 11.50
Stove plate	12.50 to 13.00
Cast borings	9.00 to 9.50

CINCINNATI.

Massillon Purchase is Most Important Transaction.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., Nov. 2.

Pig Iron.—The market here during the week has shown but little change. Inquiry is moderate and sales are mainly for small tonnages. The inquiry from a large Ohio cast-iron pipe maker for 36,000 tons is reported to have resulted in purchases of a considerable tonnage of Virginia and valley iron. This transaction appears to be the only one of importance in this territory, but sales offices are reporting continued good business in Chicago and eastern markets. Prices remain unchanged, Southern No. 2 foundry for delivery over the remainder of the year is available at $14.50 Birmingham and one sale of 1,000 tons for November-December delivery was reported on this basis. There appears to be more free southern iron for first quarter and for the remainder of the year than northern, as some northern furnaces in southern Ohio are practically sold up for the first half on 1910. The furnace of the Hamilton Iron & Steel Co., at Hamilton, O., is, however, preparing to go into blast and another stack in southern Ohio has a considerable tonnage on its yards. In southern Ohio No. 2 foundry for the remainder of the year is quotable at $17.00 and for first half of 1910 at $17.50 furnace. Southern iron appears to be firm at $15.00 Birmingham for first quarter and some furnaces are willing to accept this price for the full first half. Some southern furnaces are asking $15.50 Birmingham for second quarter alone, but it is intimated that $15.00 can be done on a firm offer. The rank and file of buyers are disposed to regard the market as having reached a point where iron is not attractive as an investment, and those who have not yet covered for the first quarter and first half seem inclined to hold off. The furnaces, on the other hand, both north and south, regard the situation as strong. There is some investment iron available and prompt shipment furnace iron is somewhat difficult to move, as buyers are generally covered for the remainder of the year and the deliveries on contracts are at lower prices than prompt shipment offerings. Southern charcoal iron is quotable at $21.50 Birmingham, although some producers are asking $22.00. Low grades continue scarce. At the close of the week two malleable inquiries have come out, one calling for 2,000 tons and another for from 1,500 to 3,000 tons, the former inquiry is from an Ohio melter and the latter is in St. Louis territory. We quote for prompt shipment and delivery over the remainder of the year, delivered Cincinnati based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

Southern foundry No. 1	$18.25 to 18.75
Southern foundry No. 2	17.75 to 18.25
Southern foundry No. 3	17.25 to 17.75
Southern foundry No. 4	16.75 to 17.25
Southern No. 1 soft	18.25 to 18.75
Southern No. 2 soft	17.75 to 18.25
Southern gray forge	16.75 to 17.00
Northern No. 1 foundry	18.70 to 19.20
Northern No. 2 foundry	18.20 to 18.70
Northern No. 3 foundry	17.70 to 18.20
Jackson county 6 per cent silicon	19.20
Jackson county 8 per cent silicon	20.20
Jackson county 10 per cent silicon	21.20

Finished Material. — Deliveries on contracts are getting farther behind and the crowded conditions of the mills continue without abatement. Some of the mill interests are canceling contracts where specifications have not been made within the time limits. Jobbers are urgently seeking to keep up their stock and there is an active retail demand.

Coke.—There is no quotable change in the market. Shipments on contracts are of good volume, but there is some difficulty in securing sufficient equipment to keep consumers satisfied, this is bringing about an occasional urgent demand for spot coke and spot coke in the Connellsville district is rather firm to a shade higher. Consumers are mainly covered and there is but little doing in the way of new business. Prices in the leading coke producing districts are as follows:

	Prompt shipment.	Remainder of year.	First half 1910.
Connellsville district:			
Fdy. coke.	$3.00 to 3.25	$3.15 to 3.25	$3.25 to 3.50
Fur. coke.	2.85 to 3.00	2.85 to 3.00	2.90 to 3.10
Wise county district:			
Fdy. coke.	2.75	2.75	3.00 to 3.50
Fur. coke.	2.25 to 2.35	2.25 to 2.35	2.35 to 2.50
Pocahontas district:			
Fdy. coke.	2.75	2.50	2.75 to 3.00
Fur. coke.	2.50	2.50	2.50 to 2.75

Old Material.—The market is in a somewhat halting condition and while there is no quotable change in prices, the feeling is not so strong. Dealers have recently shipped rather heavily on mill contracts in order to reduce holdings of high priced stock. New business is light and trade is quiet. Dealers' prices covering cost of preparation and dealers' profits are as follows:

Old No. 1 R. R. wrought, net tons	$14.50 to 15.00
No. 1 machinery, net tons	14.50 to 15.00
No. 1 busheling, net tons	14.00 to 14.50
Old iron rails, gross tons	18.50 to 19.00
Old steel rails (re-rolling) gross tons	17.50 to 18.00
Old short lengths, gross tons	16.00 to 17.00
Old iron axles, net tons	19.00 to 19.50
Heavy melting scrap, gross tons	15.00 to 15.50
Stove plate, net tons	11.00 to 11.50
Heavy turnings, net	9.50 to 10.00
Cast borings, net tons	8.25 to 8.75
Car wheels	15.50 to 16.00

NEW YORK.

Available Swedish Ore Tonnage Smaller Than Anticipated—Steel for Subways.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., Nov. 2.

Iron Ore.—The expectation heretofore entertained that 400,000 or possibly 500,000 tons of Swedish ore would be available for American furnaces in 1910 will not be realized. Within the past fortnight, a total of about 310,000 tons has been sold and this will constitute our allotment, as efforts to secure another block of 100,000 tons for a furnace interest shortly to start met with a cabled refusal. The sales were on a basis of 8½ cents per unit at seaboard and were principally to Schuylkill Valley interests, including one block of 150,000 tons. One importer still has about 200,000 tons of desirable ores, largely Spanish, to dispose of for 1910 shipment, but with this exception the bulk of the foreign ore selling has been done. So far this year the movement through the Philadelphia port has been about 725,000 tons. Ocean freights are higher, the latest being at 9 shillings, 3 pence from a Spanish port. The larger local producers have not yet announced their prices for the coming year.

Pig Iron.—With the exception of a few inquiries of considerable size, the market is relatively quiet, though prices remain firm and furnaces are being rushed for shipments. A manufacturer of air compressors and allied machinery has bought 5,000 tons of No. 2 plain and No. 3 iron for first half, and the New York Air Brake inquiry is still pending. Considerable malleable buying followed the placing of the New York Central and Baltimore & Ohio equipment orders late last week. The steamer Glenesk has arrived at Boston with 4,600 tons of No. 3 Middlesboro, all sold before the vessel's arrival. Advices from abroad account for the chartering of carrying capacity for considerable iron, steel scrap and spiegel, but the sale of all this has already been noted, and the British market is disappointed at the meagerness of American purchases. There is a heavy movement of Virginia iron into the Chicago territory, and other instances are developing of irons going into unusual consumption districts. Prices show no change, though there are still occasional reports of rather low prices by Buffalo furnaces. For delivery at New York tidewater, including the first quarter, we quote:

Northern foundry No. 1	$19.50 to 20.25
No. 2X foundry	19.00 to 19.75
No. 2 plain	18.50 to 19.25
No. 2 southern foundry	19.50 to 20.00
Malleable	19.00 to 19.50
Gray forge	17.75 to 18.25

Ferro-Alloys.—Current selling is so light that accurate quotations are difficult, and market views are conflicting although uniting in the belief that the level on ferro-manganese is somewhat higher. For instance, one interest states that consumers in the central west would buy as much as 10,000 tons for 1910 shipment, if it were available, at about $44, seaboard. Another reports inability to book business at this level, though securing about 2,000 tons at $43.75; while a third refused offers of $44 and $44.50 on good tonnage. The general holding price is $46.50 for first half and $47.50 for last, with inquiries current for about 600 tons. Ferro-silicon is unchanged at $64 to $65, Pittsburg, for 50 per cent.

Finished Materials.—The structural market enters November in a rather unusual position. October was relatively a light month, with total bookings of only about 75,000 tons, and indications are that the current month will be equally small. Quite a few structural interests still have considerable unspecified tonnage on contracts made some months ago at prices ranging down to as low as 1.20c, Pittsburg; these will expire Jan. 1, and the working interim—that is, the next six weeks—will doubtless develop keen competition and extremely low prices on fabricated materials. Two or three recent lettings of importance have indicated this pretty clearly. The eastern district is now relatively quiet, the greatest activity being in the Chicago district, the Mississippi valley and the west. San Francisco is likely to go slow in rebuilding from now on. Mills are securing materials in better shape and are operating close to maximum. The Fourth avenue (Brooklyn) subway project, which will now be pushed to completion, will require about 40,000 tons of steel; it is anticipated that the former awards will hold good, in which case the bulk of this material will probably be furnished by the leading interest. Bids will be asked late this month on the St. Louis bridge, 16,000 tons; no decision is announced on the Bellaire highway bridge over the Ohio, 3,300 tons. The 800 tons of steel required for the Boston & Albany shops will be supplied by the Shoemaker interests.

In cast iron pipe the market is inactive, though considerably quiet inquiry for next year is current. New York City is inquiring for further lots of high pressure pipe, though two former lots, involved in contractors' lettings, have not yet reached the mills.

We quote, New York delivery: Angles, 3 to 6 inches x ¼ inch and heavier, 1.66c to 1.86c; beams, 3 to 15 inches, 1.66c to 1.85c; tees, 3 x ¼ inch and heavier, 1.66c to 1.86c; plates, carload, tank, 1.66c to 1.86c; marine boiler, 2.06c to 2.16c; bar iron, 1.55c to 1.60c; soft steel bars, 1.61c to 1.66c; sheets, No. 28, black, 2.46c.

Old Materials.—For its Worcester works the Corporation has purchased about 7,500 tons of scrap, chiefly stampings and other bundled material from the Stanley works. The local situation shows little change, as a fair tonnage continues to move. Relaying rails are in better demand, but car wheels are slow and railroad wrought is lower. Some small lots of scrap are coming up from the West Indies, but chief interest attaches to the arrival of the steamer Cristobal with 400 tons of Panama scrap, bids on which were received Monday in accordance with the new plan of disposing of this material. We quote, gross tons, New York tidewater delivery, these being prices which dealers will pay:

Old steel rails (re-rolling)	17.00 to 17.50
Relaying rails	21.00 to 21.50
Old car wheels	14.50 to 15.00
Old iron car axles	22.00 to 23.00
Old steel car axles	21.00 to 21.50
Heavy melting steel	15.50 to 16.00
No. 1 railroad wrought	18.00 to 18.50
Iron track scrap	16.00 to 16.50
Wrought pipe	14.50 to 15.00
Cast borings	10.50 to 11.00
Wrought turnings	12.50 to 13.00
Heavy cast scrap	14.00 to 14.50
Railroad malleable	14.00 to 14.50
Stove plate	11.50 to 12.00
Grate bars	12.00 to 12.50

BUFFALO.

Heavy Buying of Pig Iron—Active Inquiry for First Half.

Office of THE IRON TRADE REVIEW, 932 Ellicott Square, Nov. 2.

Pig Iron.—The beginning of November business finds a strong market for iron. The demand for tonnage to be delivered the remainder of the year is fair, with a strong call for tonnage for the first half of 1910. Prices on prompt iron remain practically the same as quoted last week and a price of from 50c to $1 in advance of those prices represents fairly the quotations given on forward deliveries. The past week has seen heavy coverings. One interest is estimated as having actually booked orders for delivery in this territory amounting to 20,000 tons and from 10,000 to 15,000 tons for shipment

to other territories, mostly toward the seaboard. It was also estimated that the same interest was figuring on sales amounting to 30,000 tons in addition to tonnage contracted. Practically all the leading grades of iron are well represented in these coverings. The indications for a continuance of this activity appear to be good. Buffalo foundry interests are still running below normal with the exception of several leading interests which, at the present time, are heavily booked. Probably a fair estimate of the activity of Buffalo foundries would be 75 per cent of normal capacity.

We quote f. o. b. Buffalo, as follows:

No. 1X foundry	$17.25 to 17.75
No. 2X foundry	16 75 to 17.25
No. 2 plain	16 75 to 17.00
No. 3 foundry	16.25 to 16.50
Gray forge	16.00 to 16.50
Malleable Bessemer	17.25 to 18.25
Basic	17.75 to 18.25
Charcoal	20.00 to 21.00

Finished Products.—This market continues quiet and the absence of new specifications on structural and fabricated material is notable. There are very few substantial projects of this class noted in the market today. It is expected that the specifications for the addition to the Statler hotel, involving between 400 and 500 tons of fabricated structural, will be out within the next two weeks. Mill interests are reported fully as crowded on orders as they have been for many weeks past. The same reports come from representatives of interests outside this territory as from those representing interests within it. Deliveries on small shapes are reported four to five months behind, and on larger shapes, 60 days. It is difficult to fill orders on structural calling for deliveries within six or eight weeks and from eight weeks to four months on certain plate orders. The strained conditions at the mills make it difficult for contractors to get figures or terms satisfactory to them on business for the first quarter or first half of 1910. Mill interests are reluctant to quote for deliveries during that period at this time, and it is a matter of conjecture only as to what policy will be pursued by the steel mills with regard to that period.

While the interests are not working together, it is fair to estimate the price of bars for immediate delivery or for deliveries during the rest of the year at $1.50, Pittsburg, and $1.60, Pittsburg, on shapes and plates, and in some cases a price of from 5c to 10c in advance of those figures is obtained. There are occasional reports of consumers offering premiums for immediate deliveries on certain contracts.

BIRMINGHAM, ALA.

Furnaces Not Eager for Orders—Cast Iron Pipe Business Satisfactory.

Nov. 2.

Pig Iron.—Developments so far this week are not indicative of a change in the status of this market. Producers without exception manifest an attitude of indifference as to additional commitments and the trade generally appears unwilling to take hold very heavily for future deliveries without inducements in the shape of prices. There is little or no demand for spot shipments and notwithstanding the fact that several lots of re-sale iron are known to be available, the schedule of $15 per ton, Birmingham, is the lowest quotation heard of. In some cases producers complain of being unable to make shipments at the rate desired by their customers and it has been conceded that considerable more tonnage will of necessity be carried over into the new year than was anticipated some weeks since: but melters in practically all lines have been fairly well provided for in the activities of the past month and are apparently content to await further developments. The stock on furnace yards as shown by a recent conservative estimate is probably as small in the aggregate as at any time during the heavy movement of 1906, and the proportion of stock accumulations that is in the hands of merchant interests is known to have been very much reduced. With the recent heavy sale of low grade iron it is predicted that output of such grades during the early part of the year 1910 has been disposed of and offerings for prompt or comparatively early shipment now command most interest. A lot of 300 tons of gray forge is reported sold today at $13.50 per ton, Birmingham, which price was the consideration on a lot of 1,000 tons sold last week for shipment during the remainder of this year. Inquiries pending at this time are principally for small lots to be delivered during the first half, although in one or more cases there is a disposition to feel the market for deliveries covering the entire year.

Cast Iron Pipe.—Conditions existing in this market are apparently satisfactory to producers, the outlook being very promising and the active producing capacity so well provided for that higher prices must of necessity result in the near future. Recent contracts placed with southern interests are in the main for small lots of water pipe for maintenance and extensions. A large gas company is understood to be in the market for a round tonnage of gas pipe for next year delivery, and a number of small municipalities have recently voted bonds for water works systems. Water inches, with $1 per ton extra for gas pipe is quoted at $25 per ton, Birmingham, on an average for sizes under 12 pipe.

ST, LOUIS.

Inquiry for Malleable—For Foundry No. 2, Prevailing Price is $15, Birmingham.

Nov. 1.

Pig Iron.—A large malleable plant is in the market for 1,500 to 3,000 tons of malleable Bessemer for shipment over the remainder of the year and first half of 1910, all depending upon the price, and there are quite a number of basic pig purchases in small lots in the St. Louis territory, indicating a good and healthy feeling, but no excitement. There is less resale iron offered, therefore most of the sales made last week were at a figure established by the furnaces sometime ago, namely—$15, Birmingham basis for No. 2. Some analysis iron was sold at $14.50, Birmingham basis, last week, for delivery prior to Jan. 1. Several car loads on tracks were sold for $15.50 Birmingham basis, a premium being offered on account of ability to make immediate delivery, it was said by the seller. Northern iron is quoted at $17.25 to $18 for delivery over the remainder of the year, and at $17.50 to $18 for first half delivery—a drop, it is asserted—of 50 cents from recent quotations.

Our quotations delivered, to which the Birmingham freight of $3.75 has been added, follow:

No. 1 southern	$18.75 to 19.25
No. 2 southern	18.25 to 18.75
No. 3 southern	17.75 to 18.25
No. 4 southern	17.25 to 17.75

Coke.—An inquiry is out for 800 tons of foundry coke for prompt delivery, and another one for 5,000 tons of furnace coke, monthly delivery over the next six months or one year. Prices remain about the same on contracts, or $3.25 to $3.50, ovens, for the best 72-hour Connellsville foundry coke, but spot coke is stronger, $3.25 to $3.50 having been secured last week. The best Connellsville 48-hour coke is offered at $3 to $3.25 on contracts, and $2.80 to $3 for shipment prior to Jan. 1. Virginia 72-hour foundry grade is quoted at $3.25 to $3.50 on contracts and at $3 to $3.25 for spot. The freight to East St. Louis and St. Louis is $2.80 a ton, and $2.70 from the Virginia fields when ship-

ment is destined beyond St. Louis. By-product coke is offered at $5.80 for spot delivery, and at $6 for shipment over the first half.

BRITISH IRON MARKET.

Stock Accumulation Is Not Arrested In England.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, England, Oct. 23.

No special change is noticeable in the pig iron market this week. In the Cleveland district prices have fallen off very slightly, but the reduction is only a few pence, and probably nothing but a fluctuation. Today's quotation is 51s 3d ($12.54) which is a rise of 2d on the day though a slight fall on the week. Forward prices are still a little better, being 51s 8d ($12.64) one month and 52s 5d ($12.82) three months, which fairly reflects the confidence as to the future, in spite of some discouragements. Nothing arrests the stock accumulations which now reach 333,377 tons. Some actual business is now being done for America. The rate of trading from the Tees to Philadelphia is 5s 9d for pig iron, and 6s 9d for steel scrap. Apparently the demand is better for steel scrap than for pig iron as about 15,000 tons of the former have been sold, mostly consisting of crop ends. The shipments generally are about 50 per cent better than last month and 30 per cent above 12 months ago. From Barrow, the pig iron shipments have increased by 100,000 tons upon those of 12 months ago. Some inquiries have been received by Derbyshire for pig iron for America, but nothing has come of this, and is not likely to, as the rates from Derbyshire to the ports are 5s per ton. This renders practically impossible competition with Cleveland iron. In the Midland district, pig iron is even stronger than in the North, partly owing to the more limited output. In the Sheffield district there are reports of slight shading in pig iron but these at present lack definite confirmation. strong, with firm prices, mainly on account of the improved position of the steel trade.

Finished Material.—In the finished department, the principal event this week has been a rise of 10s per ton in the price of chilled, part chilled and soft chilled rolls; and 5s per ton in grain, grooved rolls, and mill and forge castings. Iron founders generally are fairly busy but mostly on orders booked a month or six weeks ago. There is no special activity.

The finished iron trade on the whole flags somewhat. A few works in South Staffordshire are making full time, but a considerable number are not doing more than three or four days a week. There are complaints of want of orders for bars of most descriptions. The galvanized sheet trade shows increased strength, and looks like keeping up well through the winter. Better reports of the steel trade are received, billets in particular maintaining great firmness. This is apparently due, partly to diminished foreign supplies, and also to an excellent market for tin plates. Although additional mills have been started in South Wales, all the makers in the principality are reported to be very well off for work, and some are secure for continued activity until nearly mid-summer.

Reports from the north continue to be of a rather mixed character, Sheffield in particular is dissatisfied. Makers have been buying raw material heavily, which so far they have only been able to utilize to a meager extent. Works have been extended and plant approved in expectation of a boom, which has not arrived. Even the naval orders are not panning out as well as was expected.

GERMAN IRON MARKET.

Demand Good and Large Stocks Are Disappearing.

Düsseldorf, Oct. 23.

The market here remains firm and the demand is good, especially from abroad. The large stocks of pig iron and coke are disappearing and do not press any longer upon the market. Hematite especially is in strong demand for this and next year's delivery and quotations range from 58½ marks ($14.00) to 60½ marks ($14.50), according to quality. These prices are per 1,000 kilograms, free alongside steamer Rotterdam, net cash. Fair quantities have been contracted for export to America and also to Wales, where the consumers are using German hematite in mixture with East Coast hematite. English pig iron, which up to two years ago was imported in large quantities (up to 1,000,000 tons a year) no longer comes to Germany, because an import duty of 10 marks ($2.40) per 1,000 kilograms, renders competition out of the question. The prices for German foundry pig iron with higher phosphorus are only 2 to 3 marks (50 to 75 cents) per 1,000 kilograms below the above quotations for hematite.

Blast furnace coke, best brand, is firm at 16½ marks ($4.00) per 1,000 kilograms, at mines, but foreign ores are advancing very quickly and have risen from 3 to 4 marks per 1,000 kilograms in the last four to six weeks (75 cents to $1.00). Ore is getting very scarce and will no doubt advance further.

The prices for beams, girders, plates, sheets and bar iron have also advanced from 7 to 10 marks ($1.70 to $2.50) per 1,000 kilograms and works have sufficient orders for the next two or three months.

The present improvement, however, is now coming to a standstill on account of the firmer money market. Our official bank rate has meantime been raised to 5 per cent, principally to keep away the American demand for money. It is quite possible, that the bank rate will go to 6 per cent, if the Bank of England should increase its rate in the next few days. However, even then the iron and steel situation will remain firm.

METAL MARKETS.

ST. LOUIS.

Nov. 1.

Lead and Zinc.—With the Missouri-Kansas-Oklahoma district producing more ores than at any time within its history, zinc ores took a turn skyward last week. Medium and low grade ores were the greatest in demand, the price rising for these grades as high as $53.50 for 60 per cent basis, with about $49.50 recorded for 56 per cent grades. A price of $52 to $52.50, however, was about right for medium and low grades. On choice lots, ranging from 60 to 64 per cent, the highest base quotation was $52, with a top price of $54 a ton for 62 per cent grades on a $52 basis and 63 per cent ores on a $51 basis. Calamine rose to $27 and $29 a ton, 40 per cent basis, with choice lots selling as high as $36 a ton.

Lead also increased slightly in demand, and a number of large sales were reported, some having been consummated the previous week for delivery last week. The best base price for 30 per cent ore was $56. This was $1 higher than the figures that have prevailed for several weeks. Several choice lots, 84 per cent ore, brought as high as $58 a ton on an assay base of $54. St. Louis pig lead was quoted at $4.30 Saturday, which

indicates a stronger demand for ore this week.

The total valuation of lead and zinc ores—$438,364—shipped from the district last week established a new record. The highest valuation for any previous week was for March 16, 1907, when the figures ran to $435,846, and at which time lead was selling at a high price of $85 a ton as compared to $56 last week.

There is still a car famine existing in the district, and this state of affairs has been increased by a lack of locomotives. The Frisco is having difficulty in supplying enough cars, and the Missouri Pacific is short of locomotives. Buyers are of the belief that these conditions will remain four or five weeks longer. Much of the ore that has been sold cannot be loaded out, and the report of the productions are not made public by the buyers until shipments are made.

CHICAGO.

Nov. 2.

New Metals.—Business is fairly brisk in the metal market, purchases having made quite a considerable advance in volume. The demand from the brass foundries, which are to furnish the journal brasses for the large number of cars ordered within the past two weeks, is very heavy and the total amount of copper entering into that avenue is estimated at between two and three million pounds. Reports from New York state that heavy sales of copper, running into many million pounds, have been made in the past few days. There has been nothing as yet to confirm the rumor that very strong interests are to take over the copper properties, and manage them from one central head.

We quote as follows: Lake copper, carload lots, 13⅜c to 13½c; casting copper, 13⅛c to 13¼c; smaller lots, ¼c to ¾c higher. Spelter, 6.40c to 6.50c; lead, desilverized, 4.40c to 4.45c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $8.00 list f. o. b. La Salle in car lots of 600-pound casks; pig tin, 31¾c to 32c; Cookson's antimony, 10½c; other grades, 9¾c to 10¼c.

Old Metals.—The market for old metals is a trifle stronger, in sympathy with the new metal, but there is no decided increase in the amount of business being transacted.

We quote dealers' selling prices, as follows: Copper wire, 12¾c; heavy copper, 12½c; light copper, 11⅛c; heavy red brass, 12c; heavy yellow brass, 9¼c; light brass, 6½c; No. 1 red brass borings, 9¾c; No. 1 yellow brass borings, 7½c; brass clippings, 9¼c; tea lead, 3.60c; lead scrap, 4.10c; zinc, 4½c; tin pipe, 29c; tin foil, 27c; pewter, 20c; electrotype plates, free from wood, 4¼c; electrotype dross, 3¼c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $70 per ton.

NEW YORK.

Nov. 2.

Copper.—New developments of the week have been uniformly favorable from the standpoint of the producer, and prices have responded slightly. The factor of chief importance was the announcement on Monday that sales of 30,000,000 pounds had been made by the United Metals Selling Co. in one day, in connection with which its price on electrolytic had been reduced to 13c, to meet competition. The reports of an understanding among the large selling interests, although denied, had its effect, and the situation was further strengthened by heavy buying abroad. Consumption continues about the same in this country, hence the next report of the Copper Producers' Association will probably show a further addition to surplus stocks. We quote: Lake, 12¾ to 13¼c; electrolytic, 12⅝c to 13c; casting, 12⅜c to 12⅝c.

Pig Tin.—Prices for early delivery range between 30½c and 30¾c, with a moderate volume of business. The foreign situation shows little change.

Pig Lead.—The market is inactive and prices continue near the range reported a week ago, 4.35c to 4.40c, New York, spot delivery.

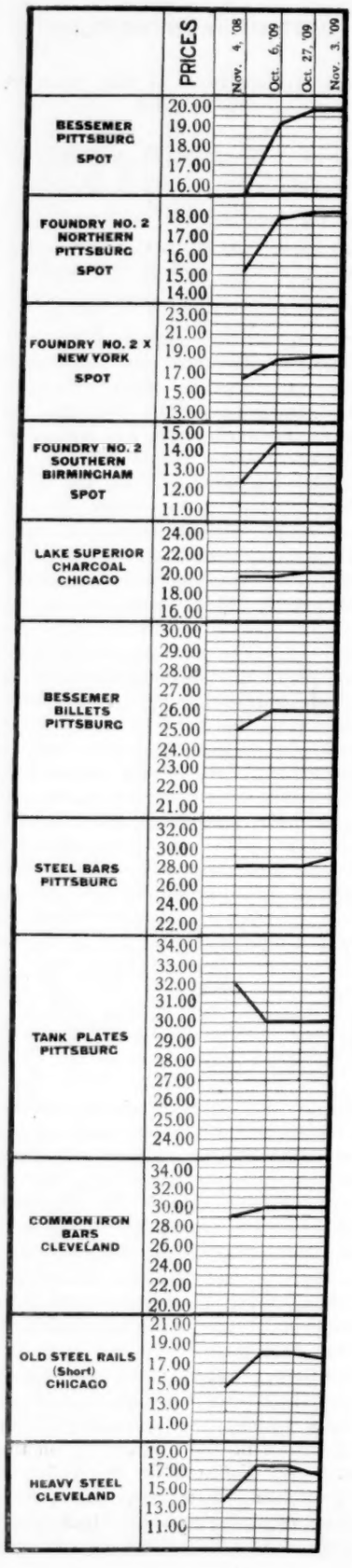
Spelter.—The market maintains its strength in view of the increased demand and the metal's strong statistical position. Current quotations on the metal exchange, 6.40c bid and 6.55c asked, fairly represent the current level for New York delivery. The tendency continues upward.

Antimony.—We quote Cookson's at 8⅜c; Hallett's at 8c to 8¼c; ordinary brands, 7½c to 7¾c.

The new factory of the Sternberg Mfg. Co. of Milwaukee, manufacturers of automobile trucks, at West Allis, Wis., will be ready for occupancy about Feb. 15. All contracts have been awarded. The plant will cost $60,000.

The Grand Rapids (Wis.) Foundry Co. has received an order for 33 of its special type coal chutes for one building from a Milwaukee contracting firm. This is the largest single order for one building that the company has received.

PRICE CHART.



ANOTHER HIGH RECORD

WAS MADE BY PIG IRON PRODUCTION FOR OCTOBER.

September's High Mark Passed by 187,330 Tons—Increase of Six in Stacks Now Active.

The pig iron production figures for October received from blast furnace operators together with several estimates of production show that there were produced in that month 2,565,985 tons. This passes the high mark of pig iron production in the history of the country, that of September, 1909, by 187,330 tons; it surpasses the previous high mark of October, 1907, by 206,295 tons.

AVERAGE DAILY PRODUCTION.

	1909.	1908.
January	57,654	34 316
February	60,051	37,476
March	58,775	39,672
April	57,788	38,504
May	60,218	37,677
June	64,331	36 876
July	67,375	39,632
August	72 020	44,065
September	79,201	47,208
October	82,774	50,764
November	.....	52,744
December	.....	55,602

The number of stacks in active operation on the last day of October was 303, a gain over the number operating on the last day of September of six. The average daily production for October was 82,774 tons compared with 79,202 which was the daily production in September.

MONTHLY PRODUCTION.

	1909.	1908.	1907.
January	1.787,473	1.043,374	2,194,801
February	1,682,470	1,086,809	2 047 036
March	1,822,024	1,229 856	2,216,709
April	1,731 406	1,155,122	2,226 708
May	1.866,757	1,168,002	2,291,030
June	1,929,929	1,106,300	2.237 420
July	2,088 620	1,228,604	2 253.243
August	2,232,642	1 366.019	2.243,656
September	2,376,039	1,416,252	2,174 148
October	2,565,985	1,573,824	2,359,690
November	.....	1,582,314	1,820 558
December	.....	1,723,664	1,234,733
Total	20,083,345	15,680,140	25,299,732

The total output of merchant stacks in October was 814,996 tons, a gain of 106,420 tons over the merchant production in September. The non-merchant production in October was 1,728,487, a gain of 19,355 tons over the non-merchant production in September. The October production of spiegel was 9,648 tons, a loss of 9,699 tons over the production of spiegel in September; the production of ferro was 12,854 tons, a gain of 1,870 tons over that of September. The following states showed gains in the number of stacks operating on the last day of October: Pennsylvania and Alabama, two each; Ohio, Virginia, West Virginia, Kentucky and Texas, one each, or a total of nine. The states showing a decrease in the number of active stacks on the last day of October were: Illinois, one; Maryland, one; Wisconsin, one, or a total of three.

TIDEWATER FURNACE WILL SOON BE OPERATED.

The Tidewater Steel Co. blast furnace at Thurlow Station, Chester, Pa., will be placed in operation as soon as necessary repairs can be completed. The property has been acquired by western interests, including Robert McCurdy, Robert Bentley, Myron Wick and Charles Hart, the last named now being in charge of the construction of the Worth Bros.' furnaces at Coatesville. The furnace will be run on basic and its output, about 70,000 tons per year, will be sold by Hickman, Williams & Co. The plant is extremely well located, enjoying deep water dock facilities, and has already contracted for a considerable tonnage of Swedish ore.

BRIDGE AT MILWAUKEE.

The Milwaukee (Wis.) board of public works has asked for proposals for constructing a bascule bridge across Milwaukee river to connect Sycamore and Michigan streets. Bids must be filed before 10:30 a. m. Tuesday, Nov. 9, and be accompanied by bonds for $37,500 or certified check for $18,750. Work is to begin Jan. 4, 1910, and the bridge must be completed Sept. 1, 1910. Charles J. Poetsch, city engineer, holds specifications.

TRAFFIC MANAGER RESIGNS.

George F. McKay, traffic manager of the Lackawanna Steel Co., at New York, has resigned, effective Nov. 1. Mr. McKay has been connected with the company in above capacity since operations were begun and his work was of an important character. He will at once become connected with the firm of Hazard, Mudge & Co., of Buffalo, Pittsburg and Rochester, and will be located in New York. A successor will soon be appointed to fill the vacancy caused by his resignation.

The General Motors Co. has declared a dividend of 150 per cent on its common stock, payable in common stock Nov. 15. This declaration follows a recent increase in the capital stock to $20,000,000 preferred, and $40,000,000 common stock.

The Perry Iron Co., Erie, Pa., has foundations installed for an additional hot blast stove to be erected at its furnace plant.

GOVERNMENT AID

Sought for Establishment of Proposed Canadian Shipyards.

Toronto, Can., Oct. 30.

Numerous reports have recently been in circulation as to various projects for establishing on a large scale ship yards in Canada in which leading British firms were interested. The scheme has apparently taken concrete form, a definite proposal having been submitted to the Dominion government Oct. 26 by a large and influential deputation from Montreal, Quebec and St. John, N. B.

The deputation declared that it Boswaife, of the Canadian Pacific Steamship service, and Andrew Allan, Montreal; Premier J. D. Hazen of New Brunswick, and Mayor Bullock, St. John; G. W. Volcaman, representing the Anglo-British contracting firm of McArthur-Perks; Hon. S. A. Taschereau of the Quebec government; W. L. McPherson of the White Star and Dominion steamship lines. J. B. Laliberte, president of the Quebec harbor board, and Mayor Bernier, Quebec; G. T. Davies of the present Levis Dry Dock & Shipping Co.; and Capt. Newton, representing Harland & Wolff, the Belfast shipping firm.

The deputations stated that it was proposed to construct at St. John, a dry dock 800 feet long and 130 feet wide with an entrance width of 100 feet with a repair plant on a proportionate scale, at a cost of $2,500,000; and to establish at Levis, Que., a dry dock 200 feet long and a modern ship building yard in conjunction with the taking over of the plant of the existing dry dock and salvage plant of the Levis company. The cost of the new plant at this point is estimated at $3,750,000.

Government aid was asked for in the form of an annual subsidy of 4 per cent on the capital expended for a term of 50 years. As the present law provides for a 3 per cent subsidy for a 20-year term the proposition will have to be submitted to parliament. The premier, Sir Wilfrid Laurier, in replying to the deputation gave the customary formal assurance that the matter would be carefully considered by the government.

The London fortnightly copper statistics published Nov 2 show that the European visible supply of copper is 222 566.400 pounds, as compared with 216,420,800 pounds on Oct. 15, an increase of 6,137,600 pounds.

COST METHODS

Considered by the Pittsburg Foundrymen's Association Meeting.

Cost methods and systematic accounting of manufacturing charges occupied the attention of the monthly meeting of the Pittsburg Foundrymen's Association held at the Fort Pitt hotel, Monday evening, Nov. 1. Ellsworth M. Taylor, of Touche, Niven & Co., New York, who is a member of the cost committee of the American Foundrymen's Association, addressed the meeting on "Foundry Costs and Their Relation to Modern Business Methods." Mr. Taylor emphasized the importance of a scientific method of determining costs in any line of manufacture. He described a modern cost system as a comprehensive scheme of business organization built upon a foundation of ordinary common sense. The first step in his judgment was to separate expenses into the two classes of production costs and selling expenses. Under the selling cost should be included all expenses connected with the selling of the product as a whole, with special attention given toward applying proportionate parts of this cost to the classes of favored goods. Under production cost, the speaker divided the plant outlay into that for direct materials, direct labor and to indirect and burden items or those that could not be weighed, measured or counted, but had been included in the manufacture of any particular article. In foundries, Mr. Taylor declared that the two units to be considered under burden items were the tonnage of castings produced and the length of time consumed in the process. The speaker emphasized the importance of a flexible cost system that would adapt itself to every possible condition incident to the expansion of a business.

Secretary F. H. Zimmers, of the association, in behalf of the committee on a permanent exhibit, reported that a number of foundry appliances are now being installed in the Carnegie Technical Schools where the display is to be established, and that other materials and machines of interest to the trade are being received from makers and sellers. The report was received and the committee ordered to proceed with the work.

New Carnegie Warehouse.—The Carnegie Steel Co. is now proceeding with the preliminary arrangements for the erection of a new warehouse in Pittsburg which will supply stock material to the trade in the Pittsburg and surrounding districts upon a larger scale than has previously been done by the company. For some time the company has been carrying a stock of plates, shapes and bars at its Upper Union mills, Thirty-third street, Pittsburg, and has been making shipments from store in a small way, but it is now proposed to erect a warehouse similar to that now conducted by the company at Waverley, N. J. The new warehouse, however, will not be upon as large a scale as that at Waverley. The site selected is at the foot of Twelfth street, which affords a frontage upon the Allegheny river. Surveys and other preliminary work upon the property are now in progress.

SCHERZER ROLLING LIFT BRIDGE ORDERS.

The Scherzer Rolling Lift Bridge Co. advises that railroad companies are replacing a number of obstructive center pier swing bridges by the modern Scherzer rolling lift bridges. One of the most prominent improvements of this nature is the replacement of a single track center pier swing bridge of the Baltimore & Ohio railroad over the Cuyahoga river, Cleveland, by a double track rolling lift bridge with a movable track of 200 feet from center to center of bearings. Among other contracts recently completed by this concern are bridges for the Seaboard Air Line, Tampa, Fla.; the San Pedro, Los Angeles & Salt Lake railway at San Pedro Harbor, Cal., and one of these bridges was recently selected and placed under contract for construction as the movable portion of a large causeway being built to connect Galveston, Tex., with the main land the bridge being designed to accommodate both railway and highway traffic. Among prominent foreign orders are the bridge for the Buenos Ayres & Great Southern railway to cross the Riachuelo river at Buenos Ayres, Argentina; an electric railway and highway bridge for the city of Dublin, Ireland, and a bridge to cross the Lachine Canal, for the Canadian Pacific railway.

The Birmingham Coal & Iron Co. is making preparations for the permanent operation of its No. 1 furnace at the Vanderbilt, Ala., plant. This furnace has, since the completion of furnace No. 2, been operated only at such times as No. 2 was out of blast for repairs. It is understood that the Birmingham Coal & Iron Co. will at a not far distant date arrange for the rehabilitation of the furnace at Tecumseh, Ala.

HEAVY ORE MOVEMENT.

Notwithstanding the Bad Weather—Freight Rates Advanced.

Notwithstanding the fact that the vessel fleet was delayed nearly a week by bad weather, over 6,600,000 tons of ore were moved during October. The exact figures cannot be given, as one dock is still lacking, but the figures total 6,346,203 tons without this dock. During September this dock, the Presque Isle dock at Marquette, shipped 315,000 tons of ore, so that 275,000 tons would be a reasonable estimate for October.

Carrying charges on ore were marked up 10 cents all around during the week, but brought out no tonnage. The fact is there is no tonnage to bring out, as practically all the vessels are engaged by contract ore and will be for the next fortnight. Low water has seriously crippled the carrying capacity of the fleet, many of the large carriers carrying 1,000 tons less than a normal cargo. There is little question, however, of the fleet's ability to equal the 1907 record during the present year. Some of the Lake Erie docks have already handled more ore than they did in 1907, notably Ashtabula.

It is predicted in the trade that carrying charges during 1910 will be restored to the old basis of 75 cents to the head of the lakes, 70 cents from Marquette, and 60 cents from Escanaba.

Grain rates at Duluth have been marked up to 3 cents with practically no tonnage offering.

The Pittsburg Steamship Co. will lay up its barges at the end of the present week, that is to say, none will be sent out after Saturday.

HAMILTON IRON & STEEL CO. REORGANIZED.

A reorganization of the Hamilton Iron & Steel Co. was accomplished Monday, and the plant will be placed in operation about Nov. 10. E. C. Seimer was elected secretary and H. L. Brenneman, treasurer.

E. M. Peters, a Pittsburg furnace expert, has been elected general manager of the plant.

The stack is now being relined and repaired and made ready to blow in as soon as possible. The company is now receiving 1,500 tons of ore a day in preparation for the beginning of operations.

No. 1 furnace of the Alabama Consolidated Coal & Iron Co., at its Gadsden, Ala., plant, has been blown in and No. 2 furnace of the same plant blown out.

CONTRACTS AWARDED

For Two Blast Furnaces and Steel Plant by Bethlehem Steel Co.

The Bethlehem Steel Co. has awarded a contract to the Pennsylvania Engineering Works, New Castle, Pa., for the erection of two large modern blast furnaces and duplex steel plant at South Bethlehem, Pa. The contract for the steel plant includes two 20-ton converters, a 400-ton hot metal mixer, hydraulic pressure line, accumulators, etc., and ladle house. The Hoover & Mason Co. will erect the bins. The steel plant will be similar to the one recently installed by the Pennsylvania Engineering Works in the Ensley plant of the Tennessee Coal, Iron & Railroad Co.

BUSY BETHLEHEM.

(Special Telegram.)

New York, Nov. 3.—The Bethlehem Steel Co. has about 125,000 tons of rail orders on its books, practically all taken during the past two months. All departments are running full. Bethlehem shapes will be used in two buildings, a 1,000-ton loft on Eleventh avenue taken by Levering & Garrigues and a 600-ton apartment on Riverside drive taken by A. E. Norton & Co.

NEW YORK AIR BRAKE CO. BUYS PIG IRON.

(Special Telegram.)

New York, Nov. 3.—The New York Air Brake Co. has closed for 4,500 tons of No. 1, No. 2 and No. 3 foundry for the remainder of the year with Buffalo furnaces. It is still in the market for 6,000 tons of No. 2 and No. 3 foundry and 1,500 tons of off-Bessemer for first half delivery.

SCATTERED RAIL SALES.

(Special Telegram.)

New York, Nov. 3.—The Illinois Steel Co. reports scattered rail sales aggregating 15,000 tons and the Carnegie Steel Co. 4,700 tons.

PANAMA SCRAP AWARDED.

(Special Telegram.)

New York, Nov. 3.—Frank Samuels was awarded the Crystobal cargo of Panama scrap at $15.15 per gross ton on cars at Jersey City, about 400 tons.

Walter-Wallingford & Co., with offices in Cincinnati and Pittsburg, have established a branch office at Chicago, in "The Rookery." R. C. Nicholas, who has been connected with the Cincinnati office for the past 20 years, will be in charge of the new branch.

AUSTRIAN MAGNESITE WORKS OF AMERICAN REFRACTORIES CO.

The large Austro-American magnesite works, at Radenthein, Austria, owned by the American Refractories Co of Chicago, was started Oct. 4 by the firing of the first kilns, and will begin deliveries of magnesite in this country on or before Dec. 1 of this year.

Construction has now been going on for over one year, and after a very large investment, this works has started up equipped with the most modern methods of calcining magnesite, including producer-gas-fired kilns, magnetic separators, electrical cleaning devices, etc. The plant starts out with a yearly capacity of 60,000 tons of dead burned magnesite.

This material will be shipped in strong jute bags, and arrangements have been made for the carrying of large stocks of magnesite at the ports of Philadelphia and New Orleans; and magnesite will also be brought in through New York.

It is the intention of the American Refractories Co. to increase the capacity of this magnesite works as rapidly as possible up to a yearly capacity of 120,000 tons.

The production of magnesite has not kept pace with the demands, as is shown by the following: In the year 1902, the world's consumption was 100 000 tons. In 1907, or five years later, this had increased to 150,000 tons, and from the rapid increase in basic open-hearth production, both in this country and in Europe it is thought the annual requirements, in another five years, or by 1912, will have reached, approximately 250,000 tons.

The Allis-Chalmers Co. will spend a quarter of a million dollars enlarging its railway motor and transformer department at Cincinnati, which is now overcrowded. Its business is very heavy.

Two new directors of the Standard Roller Bearing Co., Philadelphia, have been elected in the persons of Isaac H. Clothier, of Philadelphia, and William D. Sloane, of New York.

The torch was applied Nov. 2 to Anna stack of the Struthers Furnace Co., which has been rebuilt and its daily producing capacity greatly increased.

FOREIGN STEEL

Is Being Inquired for—Carnegie Buying Ferro-Manganese.

(Special Telegram.)

Pittsburg, Nov. 3.—There is increased inquiry for foreign steel some of which is from inland consumers, and a number of additional sales of German billets have been made by importers to users on the eastern coast.

The current reports that the Carnegie Steel Co. has entered the ferro-manganese market are understood to be well founded, and some material has been purchased by the company. Much secrecy has surrounded the movement of the company in this market, and it is not clearly established what tonnage has been taken. Sales for shipment this year have been made in this district during the past few days at $44.50, seaboard.

A steel car interest has purchased 2,000 tons of malleable for third quarter and first half at a price of about $17.50, valley.

OFFICERS OF THE CRUCIBLE STEEL CO. OF AMERICA.

Pittsburg, Nov. 1.

The full set of officers elected at the organization meeting of the board of directors of the Crucible Steel Co. of America, held at Pittsburg, is as follows:

Executive committee: Herbert DuPuy, Frank B. Smith, George E. Shaw, H. S. A. Stewart, J. D. Lyon, Reuben Miller and James H. Park.

Herbert DuPuy, chairman executive committee; Frank B. Smith, president; Reuben Miller, first vice president; Jno. A. Sutton, second vice president; C. C. Ramsey, third vice president; O. H. Wharton, fourth vice president; Chas. W. Rowlands, secretary; Geo. A. Turville, treasurer; N. W. Nolen, comptroller; A. A. H. Niebaum, assistant treasurer.

To fill the vacancy in the board of directors caused by the death of the late William H. Singer, H. D. W. English was elected for the unexpired term.

H. A. Brown, assistant general sales agent, has been promoted to the position of superintendent of branches, with headquarters at Pittsburg, effective Nov. 1.

Reuben Michener, manager of the Chicago branch, has been promoted to the position of assistant general sales agent, with headquarters at Pittsburg, effective Nov. 1.

FURNACE ACTIVITY.

New Worth Furnace to be Started About Jan. 1—Others to Blow In.

Harrisburg, Nov. 2.

Pronounced activity characterizes the operation of furnaces in eastern Pennsylvania and it is expected that three or four will be added to the list of stacks making pig iron within a short time. Juniata furnace, at Newport, will blow in the latter part of this week and one of the Bird Coleman furnaces in the Lebanon district, is to be started before very long. One was lighted last week, making seven furnaces operating in that county.

The new stack of Worth Bros. Co., at Coatesville, is to be started about Jan. 1, if completed and stores of ore are being accumulated. In addition it is probable that one Brooke furnace will be blowing soon and probably another in the Reading district.

NEW SHEET PLANT

At Niles Starts, After Signing Amalgamated Scale.

The new plant of the Deforest Sheet & Tin Plate Co., at Niles, O., was placed in active operation Monday for the first time. The plant contains four sheet and two tin mills. For the present, sheets and black plate will be made. In the spring it is planned to build two more sheet mills, two additional tin mills and a tinning plant.

The new company signed the wage scale of the Amalgamated Association Saturday, previous to starting. A considerable number of workmen, who had been brought to Niles by news of the starting of the plant, had determined to start an independent union organization. In order to obviate possibility of dealing with rival organizations of employes, the company decided to sign the Amalgamated Association scale.

STEEL CAPACITY

Will be Increased by Inland Steel Co.

The Inland Steel Co., Chicago, with works at Indiana Harbor, Ind., has arranged to install two additional 60-ton, basic, open-hearth furnaces, which will increase that company's output of open-hearth steel by about 35 per cent. The installation of the additional capacity will be made as soon as possible and it is expected that the new furnaces will be making steel in April, 1910.

STRUCTURAL CONTRACTS IN FRISCO.

San Francisco, Oct. 28.

The Ralston Works of this city is furnishing the steel for the new pier of the Western Pacific Railroad Co., which is to be completed to this city shortly. The original plan called for 800 tons of structural steel. Since then the plan and specifications have been altered and the amount of structural steel has been reduced to about 300 tons. The Western Pacific company advances the cost of building the dock and slips for its ferries, and occupies the pier until the rents shall equal the money advanced and interest, when the pier reverts to the State of California.

The Hearst estate has given the contracts for the new building it is about to construct for the *Examiner*. Instead of 23 stories as originally planned, it is to be a 12-story structure, capable of being raised to 20 stories. Work on the foundation has already been commenced. The American Bridge Co. has taken a contract for 4,000 tons structural steel for that building.

Among the minor jobs given out within the past week or so may be mentioned those secured by the Dyer Brothers of this city, which include the steel for the Stanford chapel at Stanford University, Palo Alto; and crane runways for the Mare Island Navy yard.

PERSONAL.

H. G. Dalton, of Pickands, Mather & Co., Cleveland, has returned from a three months sojourn in Europe.

Thomas Roberts, heretofore connected with the Glasgow Iron Co., has become associated with the Philadelphia office of the Jones & Laughlin Steel Co.

F. M. Stephenson has resigned as treasurer of the Central District & Printing Telegraph Co., Pittsburg, to become treasurer of the recently organized Union Sheet & Tin Plate Co., Pittsburg.

Luther Frazier, formerly of the Republic Iron & Steel Co., is now connected with the sales department of the Southern Iron & Steel Co., and will have headquarters in the Brown-Marx building at Birmingham, Ala.

T. C. Hicks, superintendent of the Pullman company's rolling mill at Pullman, Ill., has resigned, the resignation taking effect Nov. 1, and has become superintendent of the Joliet Iron Products Co.'s plant at Joliet, Ill.

Dr. Richard Moldenke, Watchung, N. J., secretary of the American Foundrymen's Association, has returned from a three-months' trip to Europe. While abroad he attended the congress of the International Association for Testing Materials, held at Copenhagen, Denmark, and also visited Germany, England and France.

Walter E. Buckingham, in charge of contracting and fabricating work at the works at Buffalo of the Lackawanna Steel Co., has resigned, effective Nov. 1. He leaves the company to become New York sales agent of the Faitoute Iron & Steel Co., of Newark, N. J. Mr. Buckingham has had considerable shop, mill and fabricating experience.

H. S. Hastings, commissioner of the United Metal Trades Association of the Pacific Coast with headquarters in Seattle, has resigned, effective Nov. 1. Immediately upon his resignation, Mr. Hastings will assume the position of general manager of the Independent Foundry Co., Portland, Ore. Mr. Hastings' successor as commissioner of the Metal Trades Association has not been selected.

M. H. Anderson, superintendent of the Reliance works of the Allis-Chalmers Co., Milwaukee, Wis., has resigned to become associated with the Bethlehem Steel Co. at Bethlehem, Pa. C. M. Christensen, foreman in the machine department at the Reliance works, has also resigned, and will be associated with a concern at Toronto, Can. A farewell banquet was tendered to Messrs. Anderson and Christensen Oct. 28.

OBITUARY.

John J. Johnson, president of the Johnson Lumber Co. of Milwaukee, died Oct. 29 at his home in that city. He was a resident of Milwaukee for about fifty years.

Frank Reifsnider, general manager of the Aluminum Flake Co., died Oct. 27 at his home in Akron, O., aged 64. At one time a pioneer in the rubber industry, he disposed of his interests and invested in Missouri lands containing aluminum deposits. In 1903 he organized the Aluminum Flake Co. which has been taking a leading place among Akron's industries.

Edmund Hendricks, head of the copper and metal firm of Hendricks Bros., 49 Cliff street, New York City, died Oct. 27, aged 74. He was a veteran of the Civil war and had devoted his life to the metals business. For many years he was a member of the board of managers of the New York Metal Exchange, having been associated with that body since its organization.

Market Close Was Buoyant

The abandonment of the bear movement, which itself had been the obvious end of the market for professional speculators to undertake for the past two weeks, was very apparent Monday. General recovery of the stock market was shown with Steel common, Amalgamated Copper and other industrial stocks leading the advance; the Imperial Bank of Germany did not advance its discount rate, and an easier tone prevailed in the European money markets; gold to the amount of $1,300,000 was exported to Canada and Brazil from New York. On Tuesday, the Steel Corporation increased its dividend on common stock one-quarter of 1 per cent, and while net earnings were equal to expectations, yet the unfilled tonnage was not and Steel common led the decline; the close of the market was weak and lower; cotton advanced to the highest price of the year. Stocks opened weak Wednesday but closed firm and higher, after recovering all the losses; Steel common was beaten down to 86⅛, under the vigor of the bear attack. The Bank of England rate remained unchanged Thursday; gold to the amount of $500,000 was exported from New York to Canada; the stock market was feverish and irregular, but closed higher. Buoyancy distinguished the market on Friday, covering by shorts being the prominent feature; cotton again advanced. Saturday's market was dull, price changes being the smallest for any day of the week.

Money on call Saturday was nominally 4 per cent. During the week, it showed less tension, reaching 3 per cent as the low mark and 4½ per cent as the high, the average being 4 per cent. In the early part of the week, time money was firm at 5 per cent for all dates, but during the latter part, an easier tendency prevailed, ending 4½ to 4¾ per cent.

The volume of bank clearings throughout the United States for the week continued large; although the total showed a decrease from last week, it also showed an increase over a year ago of 38 per cent. The market for foreign exchange was strong at New York Saturday, with rates 15 points higher. The actual figures of clearing house banks showed surplus decreased $5,507,750; loans increased $1,778,200; specie decreased $5,570,000; deposits decreased $5,400,600, and the ratio of reserve 25.9 per cent, a decrease of 0.4. Non-member banks and trust companies showed loans decreased $4,840,700; specie decreased $1,472,100; deposits decreased $6,943,200, and the percentage of reserve 17.3, unchanged. Shares were sold to the number of 4,751,300; compared with 4,938,000 the previous week, and 2,740,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the value of $19,297,000, compared with $16,862,000 the preceding week and $21,618,000 the corresponding week last year.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Oct. 30	Changes in week	Date 1909 Ann.	M't'g.	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	15½	+1¼	Sept.	2	$19,820,000		2½ Q.	.....
Allis-Chalmers, pr	52½	+2⅜			16,150,000	7 cum.	.....	Feb., 1904
American Can	12¼	+ ⅜	Feb.	2	41,233,300		1¾ Q.	.....
American Can, pr	82¼	+1			41,233,300	7 cum.	.....	Oct., 1909
Am. Car & Fdy	73¾	+5½	June	24	30,000,000		1¾ Q.	Oct., 1909
Am. Car & Fdy., pr	119	+1½			30,000,000	7 n. c.	½ Q.	Oct., 1909
American Loc	62	+5	Oct.	19	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	116	.....			25,000,000	7 cum.	1¾ Q.	Oct., 1909
American Ship	67⅜	.....	Oct.	13	7,600,000	4	1¾ Q.	Oct., 1908
American Ship, pr	110⅜	.....			7,900,000	7 cum.	1 Q.	Sept., 1909
Am. Steel Foundries(new)	64¼	+4¼	Dec.	2	17,184,000		1¾ Q.	.....
Barney & Smith	40	.....	June	1	2,000,000	4	.....	Sept., 1907
Barney & Smith, pr	100	.....			2,500,000	8 cum.	1 Q.	June, 1908
Bethlehem Steel	33⅜	+ ⅜	April	6	14,862,000		2 Q.	.....
Bethlehem Steel, pr	63	—2½			14,908,000	7 n. c.	.....	Feb., 1907
Cambria Steel	46	+1⅜	Mar.	16	45,000,000*	3	¾ Q.	Aug., 1909
Cambria Iron	46½	.....			8,468,000*	4	1½ S. A.	Sept., 1909
Chicago Pneumatic Tool	39½	+8½	Feb.	15	6,145,000	4	2 S. A.	Oct., 1907
Colorado Fuel	46¾	+3	Oct.	18	34,235,500		1 Q.	April, 1902
Crucible Steel	137⅛	— ⅜	Oct.	20	24,578,400		3½	.....
Crucible Steel, pr	83¾	+1¾			24,436,000	7 cum.	1½ Q.	Sept., 1909
Empire Steel	11	+1	April	27	1,254,770		1 Q.	.....
Empire Steel, pr	72	+2			2,500,000	6 cum.	.....	July, 1909
Fay & Egan	90	.....	Feb.	18	1,000,000	7	3 S. A.	Nov., 1908
Fay & Egan, pr	110	.....			1,000,000	7 cum.	1¾ Q.	Aug., 1909
General Electric	164	+4	May	11	65,179,600	8	2 Q.	Oct., 1909
Harbison-Walker	32	.....	Jan.	18	18,000,000		2 Q.	Oct., 1907
Harbison-Walker, pr	95	.....			9,600,000	6 cum.	1½	Oct., 1909
International Pump	50¾	+3¾	June	8	17,762,500		1½ Q.	April, 1905
International Pump, pr	89⅞	+1⅞			11,350,000	6 cum.	1½	Nov., 1909
Lackawanna Steel	61	.....	Mar.	10	34,971,400		1½ Q.	.....
Lake Sup. Corp	27½	+ ½	Oct.	6	40,000,000		.....	.....
New York Air Brake	91	+4	June	17	10,000,000	8	.....	Oct., 1907
Niles-Bement-Pond	108	+4	Feb.	3	8,500,000	3	2 Q.	Sept., 1909
Niles-Bement-Pond, pr	104	.....			2,000,000	6 cum.	1½ Q.	Aug., 1909
Otis Elevator Co	55	.....	Mar.	15	6,375,300		1½ Q.	Oct., 1909
Otis Elevator Co., pr	96	.....			6,295,000	3 n. c.	1½ S. A.	Oct., 1909
Pa. Steel	70	.....	May	10	10,750,000		1½ Q.	.....
Pa. Steel, pr	116	.....			16,500,000	7 n. c.	3½ S. A.	Nov., 1909
Pittsburg Coal Co	21⅞	+1⅜	Mar.	9	32,000,000		3½ S. A.	.....
Pittsburg Coal Co., pr	62¾	+1⅝			32,000,000	7 n. c.	.....	April, 1905
Pressed Steel Car	51⅞	+5⅜	Feb.	17	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	107½	+1½			12,500,000	7 n. c.	1¾ Q.	Aug., 1909
Pullman	193¾	+2¾	Nov.	10	100,000,000	8	2 Q.	Aug., 1909
Railway Stl. Spring	48⅞	+3¾	Mar.	4	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	106¼	—1¾			13,500,000	7 cum.	1¾ Q.	July, 1909
Rep. Iron & Steel	47⅜	+2⅞	Oct.	20	27,191,000		.....	.....
Rep. Iron & Steel, pr	106¼	+2¼			20,416,900	7 cum.	2½ Q. †	Oct., 1909
Sloss-Sheffield	92	+3	Mar.	10	10,000,000	5	1¼ Q.	Sept., 1909
Sloss-Sheffield, pr	119	—1			6,700,000	7 n. c.	1¾ Q.	Oct., 1909
U. S. Pipe & Fdy. Co	31¾	— ⅝	June	23	12,106,300	2	1 Q.	Dec., 1907
U. S. Pipe & Fdy., pr	85½	+ ⅜			12,106,300	7 n. c.	1¾ Q.	Sept., 1909
U. S. Steel	90⅛	+3½	April	19	508,302,500	3 n. c.	¾ Q.	Sept., 1909
U. S. Steel, pr	128	+2⅛			360,281,100	7 cum.	1¾ Q.	Aug., 1909
U. S. Steel, 5s	105¾	.....			463,398,000	5	1¾ Q.	.....
Va. Iron, Coal & Coke	71¾	+1¾	Sept.	21	9,073,680		5 A.	.....
Westinghouse Elec	87	+2½	June	16	27,173,200	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	140	+ ¾	Oct.	5	14,000,000		2½ Q.	Oct., 1909

Par value of shares, $100, except those starred (*), $50.
†Includes deferred dividend of ¾ of 1 per cent.

Copper Stocks.

New York.—Amalgamated Copper closed 86¼, a net gain of 6¾.

Boston.—Butte Coalition closed 28¾, a net gain of 1¾; Calumet & Arizona closed 103, a net gain of 5; Calumet & Hecla closed 670, a net gain of 30; North Butte Mining closed 60¾, a net gain of ½; Quincy Mining closed 87, a net gain of 1.

Financial Notes.

The International Harvester Co. declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable Dec. 1; the Flannery Bolt Co., Pittsburg, the usual quarterly dividend of $5 a share, payable Oct. 30; the Pressed Steel Car Co., the regular quarterly dividend of 1¾ per cent on preferred, payable Nov. 24.

Belgium's production of pig iron during September was 145,590 tons, 37 out of its 44 furnaces being in blast. Up to Oct. 1 its pig iron production for 1909 was 1,180,240 tons, compared with 882,510 tons during the same period in 1908.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

PUBLISHED EVERY THURSDAY BY
THE PENTON PUBLISHING CO.
CLEVELAND.

BUFFALO.....932 Ellicott Sq.
CHICAGO.....1328 Monadnock Blk.
CINCINNATI.....First National Bank Bldg.
NEW YORK.....1005 West Street Bldg.
PITTSBURG.....510 Park Bldg.
SEATTLE.....302 Pioneer Bldg.

Subscription, United States and Mexico, $3.00 per annum. To Canada and Foreign Countries, $4.50. The price of copies issued three months or more previous to date of current issue will be 25 cents each. Advertising rates furnished on application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POST OFFICE AT CLEVELAND AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP.

COPYRIGHT 1909 BY PENTON PUBLISHING CO.

THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January	5,506
February	5,346
March	5,396
April	5,508
May	5,533
June	5,551
July	5,572
August	5,597
September	5,609
October	5,628

November 4, 1909.

DOUBLING THE SIZE OF THE DAILY.

(From Daily Edition, Nov. 1.)

The first issue of the Daily IRON TRADE REVIEW appeared Sept. 2, and the new paper has been so cordially received during the two months of its existence that all doubt as to its complete success has been removed. Live, wide awake men in the iron business in all parts of the country have been quick to realize the opportunity of getting information concerning the trade more frequently than once a week, and the publication daily of important items concerning sales, price changes, new concerns and many other matters, has furnished positive evidence that there is a real field of usefulness for a daily iron paper.

We celebrate the second monthly anniversary of the daily by enlarging its size from four to eight pages in order to make room for a limited amount of advertising and to publish news which it has been impossible to include in the smaller paper. In the enlarged edition, the same general idea which has been followed in the smaller edition will be adhered to; that is, the constant effort will be to publish as many items as possible, and to review market conditions briefly for the benefit of the busy man. New features will be added from time to time and as the demand for them becomes apparent.

SHIPPERS, RAILROADS AND LEGISLATION.

A recent notice announcing that the Railway Business Association will hold its annual meeting at the Waldorf-Astoria hotel, New York, Nov. 10, is interesting in the light of recent developments. This association, composed of railroad and business associations, was organized last January with a view of bringing pressure to bear upon legislative bodies, both state and national, to deal with transportation questions and corporate interests in a more temperate manner and to check the tendency toward legislation unfavorable to railroads and large corporate interests in order that investments in railroad securities should not suffer in the markets and that the buying power of the railroads might in this manner be assisted.

The proposition was accepted with favor in a number of localities and quite a number of business organizations passed resolutions along the lines indicated above.

The revival in business began during the summer and has continued with steady gains to the present time. Just as business affairs were shaping favorably, C. C. McCain, chairman of the Trunk Line Association, issued a pamphlet regarding the "Diminished Purchasing Power of Railway Earnings," which was construed by the shipping public as advance notice of a general advance in freight rates. This document made a comparison of prices of iron and steel products which, as stated in the editorial published in THE IRON TRADE REVIEW of Sept. 30 last, was not fairly stated and did not form a basis for a just conclusion. The matter was at once made the subject of careful analysis by the various shippers' associations of the country, which replied to Mr. McCain's pamphlet, addressing their replies to the heads of the railroads. Some of the railroad officials undertook to deny responsibility for Mr. McCain's utterances.

It has been announced during the past week that another pamphlet has been issued by the Bureau of Railway News and Statistics, which bureau is in charge of Slason Thompson, who seeks to add strength and defense to the statement recently issued by Mr. McCain.

Without entering into the merits of the controversy to a greater extent than we did in our editorial of Sept. 30, we may say that the whole situation appears to be in a rather mixed state. The railroads appealed to the business organizations to assist them in curbing adverse legislation, the shippers responded to this call in a number of instances, the Railway Business Association was organized to promote this object, and under the circumstances it seems that the statement issued by Mr. McCain can have but one effect, namely, to arouse antagonism toward railroad interests, thus defeating the object of the Railway Business Association.

The time has passed when railroad companies or officials of railroad associations can issue public statements calculated to influence public opinion without having these statements carefully analyzed and criticized by experts. The shippers' organizations throughout the country are employing expert men with thorough knowledge of railroad business to guard their interests and it seems to have been unwise or at least unfortunate that Mr. McCain should have precipitated a controversy betwen the shippers and the railroad interests so shortly after the organization of the Railway Business Association.

THE STEEL SHEET AND THE ALL-STEEL RAILWAY COACH.

Manufacturers of sheet steel are looking with much satisfaction upon

the development of the all-steel steam and street railway coach. In this latest product of the car builder's art, there is perceived a new field for mill outputs that promises to expand into important proportions.

The steel car industry even in its present vigorous state is believed to be scarcely more than in its infancy, since its beginning as a manufacturing activity of commercial extent dates back but a few years. The steel coach logically has followed the development and the adoption of the all-steel freight car into general use, and this branch of the industry has lately been given an impetus by large purchases by the Pennsylvania, New York Central and other leading railroad systems. The steel street car has more recently made its appearance upon the market, but this type of construction, strictly speaking, is still in the experimental stage. The steel coach type is especially of interest to the sheet makers since their product, by reason of the lighter construction, enters into it more largely than in the gondola or hopper freight car where the severer traffic requirements have necessitated the use of plates and the heavier steel materials in the upper parts. Black sheets ranging from No. 10 gage or light plates up to No. 26 gage have been adopted by the car manufacturers in the building of the super-structures of the passenger equipment. It is estimated that fully five to ten tons of sheet steel and light plates are required for a single standard passenger coach.

In other lines of car building the steel sheet has become a material of prominence and annually there is consumed a large tonnage for this purpose. Roofing sheets are used extensively in box car roofs while another grade of sheets finds a steady market with the car manufacturer, in its adaptability for the lining of refrigerator cars.

LAWS OF BUSINESS AND MEN.

Under the above caption, the New York Times, commenting on the banquet to Judge Gary on Oct. 15 says in part in its issue of Oct. 17:

It belittles the tribute to Judge Gary to regard its significance as solely personal. Never before was there such an assembly of the representatives of the iron industry of this continent. They came together to do honor to their leader, not merely because he is the admirable sort of man they acclaimed him, but because he introduced into their trade a principle which was previously new to those who sat around him. Important as this principle is to the iron industry, it is even more important to the country at large. The Nation can be truly prosperous only when the same principle is acknowledged in all its economic interests, and yet at the moment it is being fought with futile energy by men whose claim to leadership is antagonism to all that Judge Gary represents.

The remarkable thing about the dinner is that it was not a dinner of a trade ring or clique. It was as nearly universal as can ever be hoped for. Probably nine-tenths of the industry was represented in body, and there is no reason to suppose that any part was absent in spirit. The Steel Trust has never taken away the top of the market from anybody, freely allowing the independents to oversell it when the market was above a reasonable level. And not long ago the Steel Trust did not undersell the little fellows whom it could have wiped out in a struggle for trade and existence. At the present moment the trust is moderating the speculative tendency in the steel market, and keeping out of it some of the fever which contains possibilities of reaction in the markets for cotton, breadstuffs, and securities alike. Unlike the iron trade, all those markets lack wise leadership, and alternate between depression and despair. So it used to be in the iron trade until the advent of the principles of co-operation, of live and let live, which Judge Gary embodies. There were men at his testimonial who would have succumbed to the trade depression from which we are emerging. They were present because they were grateful for their survival from a stress under which their predecessors became bankrupt by dozens and scores. So far as commercial sentiment goes they were unanimous in the opinion that this policy was for the universal good.

What the politicians are floundering about and failing to do the Steel Trust has done as nearly as is practicable, perhaps as nearly as is desirable. The politicians and the captains of industry are both striving to promote stability of trade, abolishing as far as may be the alterations of feast and famine, or the passage from pauperdom to princedom, as is said of the iron industry. The reason that the statutes fail is both that they are wrong in principle and that their methods are worse than their principles. Judge Gary represents the principle of the economic rather than the statutory control of prices, and of bringing to the task the methods of a statesman rather than a pirate. There is not an American who has a stake in the country who would not be benefited if our lawmakers would master the meaning of Friday's banquet.

The Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., increased by 5 per cent the wages of all employes Oct. 15, a return to the rate paid in 1907.

LABOR PAPER URGES CALLING OFF STRIKE.

The *National Labor Tribune*, one of the official organs of union labor, in its issue of Oct. 28, editorially urges the officials of the Amalgamated Association of Iron, Steel & Tin Workers to call off the strike against the union mills of the American Sheet & Tin Plate Co. The paper says the strike is hopelessly lost and advises the men to return to their jobs. The editorial says in part:

The *National Labor Tribune* has supported the Amalgamated Association in every fight it ever made, from the first one to the last; but we can no longer support this one because we know, as everybody looking the truth squarely in the face now knows, that every chance of victory disappeared a month ago. The American Sheet & Tin Plate Co. is operating its principal plants at close to their full capacity. If the output of the mills is not as large as it was before the strike was declared, it is at least near enough to that point to convince every honest investigator of the situation that in a month more the company will have placed itself in such a position as to be indifferent whether the strikers return to work or not.

No set of men who have the welfare of trades unionism truly at heart will force loyal union workingmen to desert the union or starve. This is the outrageous thing that the officials of the Amalgamated Association are now doing to their faithful followers in the sheet and tin plate division.

The *National Labor Tribune* is the official organ of the Sons of Vulcan, which is a rival organization to the Amalgamated Association in the iron mills. The paper of the Amalgamated Association is the *Amalgamated Journal.*

The *Tribune* states that its own investigation as to the actual condition of operations in the mills of the American Sheet & Tin Plate Co. shows running 166 hot tin mills out of 242 and 157 sheet mills out of 186. Some tin plants are obsolete, and the total serviceable capacity of the company is rated at 221 mills.

Copper exports for October in tons amounted to 23,651, an increase of 1,889 tons over 1908. It is announced that the United Metals Selling Co., on Oct. 30, sold 30,000,000 pounds of copper. It is expected that heavy sales of the metal will be made later.

Oxford, N. J., furnace is banked because of the recent burning of its casting, stock and hoisting houses. Repairs are being rushed and operations will be suspended only a short time.

SATISFACTORY RESULTS

Of the Operation of the New Tariff Law Promoting Foreign Trade.

Washington, D. C., Nov. 2.—According to inside advices from the state department, there is a determination among the officials of that department, in completing the work of reorganization in the interests of promoting the foreign trade of the United States, that every possible effort shall be directed toward South America. This will not be done to the extent of ignoring the possibilities of the orient, but the officials are convinced that the greatest possibilities in the direction of manufactures, notably the best class of modern articles that are turned out by the iron and steel mills, and industries which fabricate commodities which enter directly into consumption, are to be found among the South Americans, whose civilization along present-day lines is more advanced than is that of the orientals.

Moreover, it is certain that the new bureau of trade relations in the department is to be organized upon lines well calculated to promote the rapid introduction of high grade American novelties, fit for immediate consumption. In this respect it is certain that iron and steel goods will have early and favorable consideration. Prompt steps will be taken to bring about the introduction of these classes of goods in the various business centers of the South American states.

Directly in line with this aggressive movement on the part of the state department officials is the information at hand regarding the success of the preliminary movement to bring about the establishment of a bank in South America. These advices are to the effect that a bank of the first power is to be established with branches in all the leading commercial centers of the Latin-American states. This, with the movement on foot, under better prospects than ever before, of securing federal aid to American shipping engaged in the over-ocean carrying trade, gives promise of closer connecting links between the export points of the United States and the import centers of the South American countries.

The prospect for increased business in the export trade of the country in iron and steel goods is being watched with particular interest by the officials of the government since the new tariff law is getting down to a smooth working basis. The first two months in the life of the new law gives promise of favorable operations. The details of the workings of the law, in its influence upon exports and imports of iron and steel goods, have not yet been compiled by the officials charged with that duty. The general results, however, are now known, and they are regarded as being very satisfactory.

Notwithstanding the substantial reductions made in the rates of duty on iron and steel articles by the new tariff, the gain in importations for the second month of the operations of the new law has not been as great as the gain in exports for the same period, compared with the corresponding month of last year. September is not a month of heavy importations, as a rule, and, with the exception of breadstuffs exports, the outgo of commodities is ordinarily not so heavy in that month as at other times.

It will be disclosed, therefore, when the tables of the September exports are completed, that our sales abroad of steel rails, electrical instruments, typewriters, sewing machines, locks, hinges, tools and metal working machinery have made substantial increases over the business of the corresponding month a year ago. Structural steel exports, however, show some decline over the September record of a year ago.

The gains in the volume of imports of iron and steel goods are not disclosed in the preliminary figures prepared by the government, but they are believed to be comparatively slight, considering the gain in exports of such goods.

CONTRACT FOR OPEN-HEARTH FURNACE.

The Lawrence Iron & Steel Foundry Co., formerly the Yagle Foundry & Machine Co., Pittsburg, has awarded a contract for the construction of a 15-ton open-hearth furnace which is expected to be completed and in operation by Jan. 1, 1910, enabling the company to become a maker of steel castings.

WAGE INCREASE.

The Standard Chain Co. has posted notices that beginning Nov. 1, its employes will receive a 5-per cent increase in wages to be followed by a second 5-per cent increase Jan. 1, 1910. These increases will restore wages to the basis paid before the depression.

BRITISH TRADE

Greatly Disappointed Over Small Purchases by America.

New York, Nov. 1.

Advices from abroad are all to the effect that the British iron trade is greatly disappointed over the light purchasing by American interests and is now of the opinion that the movement promises little improvement. The latter view is borne out by the announcement that within the past fortnight Glasgow houses have sold on behalf of American clients upward of 30,000 tons of No. 3 Middlesboro warrants, purchased at about 48s.

Under date of Oct. 23 *The Ironmonger* tabulates American chartering from the northeast coast as including the following vessels: Winnie, steel scrap; Glenesk, 4,600 tons of No. 3; Gresham, 3,000 tons of No. 3 and 2,500 tons of steel scrap; Kyleakin, 4,800 tons of No. 3; Ikbal, 4,500 tons of spiegel; Farnham, 3,000 tons of spiegel, 1,500 tons of No. 3 and 1,500 tons of steel scrap. This list includes about 14,000 tons of No. 3 iron, 7,500 tons of steel scrap and 7,500 tons of spiegel. Of these, the Winnie and Glenesk have arrived, the former at Philadelphia and the latter at Boston.

The Ironmonger further states that "there has been an excellent inquiry from America for ferro-manganese, partly for very far-distant shipment, and inquiries are reported to be good for low phosphorus iron and steel scrap. Of the latter large quantities have been done on the Continent, and the material will be shipped from Rotterdam in 500-ton and 1,000-ton parcels. America has also bought some steel billets on the Continent."

Two vessels have recently sailed from the Clyde with a total of about 3,000 tons of Scotch brands, destined for California.

NATIONAL FOUNDERS MEET.

The National Founders' Association, which will meet in its thirteenth annual convention Nov. 9 and 10 at the Hotel Astor, New York City, will hold the alumni banquet of the administrative council at the same hotel Monday evening, Nov. 8. The annual banquet of the association will be held Tuesday evening, Nov. 9.

Receiver W. B. Melish, of the Steel Foundry Co., Cincinnati, announces that the plant on Spring Grove avenue has been sold to eastern capitalists. Two years ago the receiver took charge and by sales has paid two 10 per cent dividends.

SHEET DEMAND

Promises to Make a New Record During the Coming Year.

Sheet manufacturers are predicting that the coming year will be one of the largest if not the largest in the history of the industry. If present indications are borne out and the approaching year sets a new high record for consumption, it will only be fulfilling what has become a matter of precedent in the market. Statistics show there has been a very rapid increase in the use of sheets over recent years, and that production of the merchantable grades has more than doubled in the past decade. Recent new plant construction and extensions have been keeping pace with expectations based on the past development of the industry, so that the present serviceable capacity of the country is in excess of 350 hot mills. The uses to which the steel sheet is being put have become so diversified that, with the growing scarcity of wood, the consumption of this material is being supported by many lines of ordinary daily wants.

Buying of sheets into the new year has been inaugurated by consumers and jobbers in a way that is reflecting a heavy year's demand before the industry. Where makers have been disposed to open their books for first quarter shipments, they have met with a hearty response from buyers who are invariably estimating their probable needs in their contracts at larger figures than in the past. This tendency is causing sheet manufacturers considerable trouble to discriminate between the increases of consumptive needs and the speculative purchases. There are instances of prominent makers declining as yet to sell beyond the end of the present year, and exclusive of some special cases, they have booked no business for first quarter.

Deliveries on blue annealed sheets are badly congested, and early shipments are practically impossible unless at premium rates to some mills. The situation in galvanized sheets, where some heavy stocks have been carried by makers, is not so bad. The rising spelter market and the inability of some makers to cover themselves on their sheet bar supplies is causing guarded selling by some interests of the galvanized product for any very distant future period.

At the present time the independent sheet mills of the country are running at about 88 per cent of capacity while those of the American Sheet & Tin Plate Co. are operating at a rate of about 83 per cent. The latter company has idle its large Aetna-Standard plant at Bridgeport, O., because of the strike of the Amalgamated Association of Iron, Steel & Tin Workers.

FOREIGN ORE CONTRACTING NOW WELL OVER.

The recent closing of contracts by which three Schuylkill Valley furnace interests will receive a total of 310,000 tons of Swedish ore during 1910, with the probability that an additional 100,000 tons will shortly be closed for, disposes of practically all which this source will have to offer during the coming year, as the maximum tonnage figured on has been 500,000 tons. The price is reported as 8¼ to 8½ cents per unit, ex-ship, duty paid, a considerable advance over this year's sales.

This Swedish ore runs high in iron and is finding general favor among basic producers for mixture with eastern magnetites and local ores, supplanting lake ores. So far as can be seen at present, no other foreign ores will be available in important tonnages during 1910, as the bulk of the Newfoundland and Spanish supplies were contracted for some time ago. Domestic ore producers in the east, however, have sold little of their 1910 output.

WILL BUILD FREIGHT CARS.

San Francisco, Oct. 30.

The Pacific Car & Foundry Co., a new corporation, is about to build a plant for the purpose of manufacturing freight cars on the Pacific coast. The company has acquired a very large tract of land at Point Richmond, a suburb of San Francisco, and has started work for the new plant, which will be the only plant in which railroad cars are to be manufactured west of the Mississippi river. The company has issued $500,000 in first mortgage bonds for the initial work, bearing 6 per cent interest, underwritten and guaranteed by the Metropolis Trust and Savings Bank of this city, and the entire issue is practically subscribed for. The new enterprise will furnish employment to many mechanics and prove a valuable addition to the new manufacturing town of Point Richmond, situated across the bay and within easy reach of San Francisco.

The Virginia Iron, Coal & Coke Co. is expending $50,000 on the two Watts, Ky., stacks and plans to blow them in soon.

BALTIMORE TRADE

Is More Active—Machinery and Material in Demand.

Baltimore, Oct. 30.

Considerable strength is noted in the entire market here at present. Machinery inquiries are more active than for some time due to an unusual development of many local and nearby manufactories which are preparing to increase capacity. The structural market also shows considerable improvement. Plate and shape makers have entered up large orders during the past month. The largest structural contract now pending is for the 14-story addition to the Fidelity Trust & Deposit Co., 2,600 tons.

A contract will be signed next week by Acting Secretary of the Navy Winthrop for the building by the Maryland Steel Co. of a $1,000,000 fleet collier, designed to be the largest in the naval service.

FOREIGN NEWS NOTES.

A wire nail syndicate is in process of formation in Germany, to hold for five years. There is also in contemplation a more binding association of drawn wire manufacturers, and the wire cable manufacturers will continue their association. German bar iron makers have an agreement covering first quarter sales, and negotiations are on for extending its term and scope.

British iron makers are complaining bitterly over the diminished volume of purchasing by Germany. On this subject *The Ironmonger* says: "Home trade is none too brisk, and the market badly misses the customary volume of German purchases, the diminished takings from Germany having been a matter of considerable disappointment for a good many months."

Stocks of British pig iron continue to increase. Connal's yards on Nov. 14 held 327,144 tons, against 79,778 tons at the same date last year. Stocks of West Coast hematite are 15,851 tons. The Connal's stock consists of 302,973 tons of No. 3, 21,461 tons of standard and 2,910 tons of "other kinds."

Although the Erie canal may not be closed to shipping until after Nov. 15, selling of Buffalo pig iron for delivery at Sound points by boat has practically been suspended. Sales are already being made, however, for delivery after the opening of canal navigation in the spring.

MAXIMUM OUTPUT

In the Connellsville Region Has Very Nearly Been Reached.

Coke production in the Connellsville regions having reached the highest point in history, is still increasing, but the maximum output seems close at hand. Some improvement in the labor supply in the coke regions was to be noted the past week. The weekly report of the Coke Producers' Association is as follows:

Our reports for the week ending Saturday, Oct. 23, showed 34,682 of the 38,668 available coke ovens in the two districts in operation. There was a gain of 213 active ovens during the week and the estimated production was 441,789 tons, an increase of 2,743 tons over the preceding week.

The Hustead plant of the Hustead Semans Coal & Coke Co., 100 ovens, is now running full. Among the ovens fired 20 ovens were put in at Ada, 13 additional at Thompson Connellsville, 34 additional at Tower Hill, 39 additional at Atcheson, 10 at Fairbanks and 20 at La Belle. A few ovens were added at several other plants and 69 were put out among four different works.

Of the available ovens of the region, 89.7 per cent is now active. The idle ovens, 3,986 in number, are about at the minimum point, and barring a somewhat restricted production due to labor shortage, the maximum production of coke in the two districts has about been reached.

There was an improvement in the labor supply last week at a number of the plants.

Shipments to Pittsburg and points west were 13,163 cars, an even 600 more cars than the week before. Eastern shipments were reported as 1,075 cars, 230 more than the week before.

EXPORTS OF WIRE TO NEW ZEALAND MARKETS.

Washington, D. C., Nov. 1.—One of the most recent reports received at the bureau of manufactures, covering the details of our export business, show some surprising results with respect to the exports of steel wire, both plain and barbed, to the New Zealand markets.

The report covers a period of four years, down to the end of last year. It appears from the figures that while there have been gains in imports of these various kinds of wire into the New Zealand markets, the United States are holding their own against the competition of the wire producers of both the United Kingdom and Germany.

With respect to plain wire the exports from the United States to these markets amounted last year to more than 4,000 tons, or a quarter of the total imports of that kind of wire. We sold in New Zealand, also, more than 2,000 tons of barbed wire, or nearly half the total imports of the country. In barbed wire sales the United States leads Great Britain by nearly 500 tons. In plain wire, however, the United Kingdom leads the United States by about 1,500 tons. Germany is the principal competitor of the United Kingdom and the United States for wire in the New Zealand markets.

NORTHWESTERN IRON CO. INCREASES CAPITAL.

The Northwestern Iron Co., Colby-Abbot building, Milwaukee, Wis., with mines at Iron Ridge and furnaces at Mayville, Wis., has increased its capital stock from $1,000,000 to $2,000,000. Shortly after the purchase of the Northwestern properties by the Schlesinger interests, the capital stock was increased from $500,000 to $1,000,000.

The additional issue is to care for improvements now under way and those projected in the future. New bins and steel trestles are being constructed at Mayville. Stack A is being entirely rebuilt and enlarged.

NEW DIRECTORS CHOSEN.

Republic Iron & Steel Co.'s stockholders at their annual meeting elected John F. Harris, of the Chicago brokerage house of Harris, Winthrop & Co., a director to succeed Harry S. Black, whose term had expired. Other directors were re-elected.

James McNaughton, vice president of the American Locomotive Co., has been elected a director of that company at the annual meeting, succeeding the late Joseph Bryan; Dumont Clarke was also chosen to succeed R. J. Cross, a retiring director.

At the annual meeting of the General Motors Co., H. G. Hamilton was chosen to the board of directors in succession to F. L. Smith, and J. T. Smith was elected in the place of H. Russell. Other directors and officers were re-elected.

William A. Salomon has been chosen a director of the International Steam Pump Co. at a special meeting.

The Thomas Iron Co. will blow in its idle stack at Alburtis, Pa., as soon as it can be put in shape for operating This is a stone stack, using anthracite fuel, and has been out of blast through the depression. Its return to the active list will give the Thomas company ten stacks in operation and none idle.

VALUE OF STRUCTURAL STEEL USED TO REBUILD CITY.

San Francisco, Oct. 30.

The amount of structural steel used in San Francisco in the construction of new buildings erected and completed from May, 1906, to July 1, 1909, is 284,715 tons, valued at $20,784,195, an average of $73 a ton, according to the figures compiled by the Architectural Club which is now holding an exposition in this city. The value of new buildings erected during that same period is $139,584,538, classified as follows: 86 class A buildings, value $20,063,260; 113 class B buildings, value $8,435,871; 1,477 class C, $45,510,641; 13,444 frame buildings, $55,487,512; 7,198 alterations, $10,087,254. These figures do not include buildings in course of construction at the time the figures were compiled.

The official records of San Francisco show that since May, 1906, contracts amounting to $143,866,915 have been recorded and that 23,400 building permits have been issued for a total of $164,934,802. These figures do not include thousands of temporary structures erected immediately after the great fire for which no permits were required.

John P. Nichols, assistant general sales agent of the Lackawanna Steel Co., at New York, has resigned to accept the position of vice president and general manager of the Lackawanna Bridge Co., at Buffalo. This change is effective immediately. The Lackawanna Bridge Co., as previously explained in THE IRON TRADE REVIEW, is constructing a plant at Buffalo with extensive facilities for bridge and structural work. Building is progressing rapidly and a part of the plant is likely to be in operation Dec. 1.

Exports of copper metal for the week ending Oct. 23 were somewhat larger than the preceding week, being 10,440,559 pounds, compared with 10,398,869 pounds for the week of Oct. 16. The heavy shipments to Great Britain were easily the feature of the week, being 5,127,742 pounds. Germany took 4,000,000 pounds and Austria's were heavier than in weeks, being 1,376,673 pounds.

The Wayne Iron Works, Inc., advises us that there is absolutely no foundation for the report that its works, now located at Wayne, Pa., will be removed to Conshohocken. The company specializes on structural and ornamental iron work.

AMONG MACHINERY MAKERS.

CINCINNATI.

October Business in Machine Tools Not Up to September Record.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., Nov. 2.

The demand for machine tools has shown no material change during the past week and the volume of business is very satisfactory. There is observable an irregularity in reference to the demand and some shops appear to be more favored than others in the same line. The demand for planers, large lathes and radial drills has not improved as rapidly as makers of these heavy machines hoped. The aggregate business booked in October was probably not quite equal to the September record, but the activities in the shops have continued up to the limit of the labor supply. The good demand during August and September supplemented by the October business has taken up most of the stock manufactured during the depression and most of the shops report only a few odd sizes of machines on hand for early shipment. Some of the shops are sold up well into the first quarter of next year so that the slight falling off in the volume of orders during October has had no material effect on trade conditions. One of the large engine builders is busy on orders, while another shop in the same line is dull. Milling machines and lathes are the most active in point of demand. The shaper business is more quiet than a month ago. The automobile industry continues to lead as a purchasing interest, while the railroads are very little in evidence as buyers.

The Cincinnati Metal Trades Association is arranging for its quarterly dinner to be held early in December. While the date has not been definitely fixed, owing to the uncertainty of an open date for one of the speakers, it is probable that December 9 will be selected. The meeting promises to be of unusual interest as the committee on entertainment has received assurances from the following speakers that they would be present and address the meeting: Chas. E. Carpenter, general manager of E. F. Houghton & Co., Philadelphia; Edwin E. Bartlett, Boston; and Dr. Wm. H. Tolman, of the Museum of Safety & Sanitation, New York City.

William Gilbert, president of the Buckeye Foundry Co. has purchased a lot of 180 x 400 feet at the northwest corner of Colerain avenue and Brashers street, the consideration being $3,650. The land was sold at public auction. Mr. Gilbert is not in the city but it is rumored there is probability of his company building another foundry on the property secured, which is in the heart of the machine tool district.

PITTSBURG.

Steel Companies Award Contracts for Equipment Requirements.

Office of THE IRON TRADE REVIEW, 510 Park Building, Nov. 2.

Definite action taken in connection with two large programs of mill improvements have focussed the attention of builders of heavy machinery in the week. The Bethlehem Steel Co. made an important award for the extensions it has in contemplation at South Bethlehem, Pa., and is expected to place other contracts for mill machinery shortly. The American Rolling Mill Co. has come into the market with a large list of equipment requirements for its new mills and is now considering the estimates of builders.

All the makers of the heavier lines of rolling mill machinery are in a very comfortable position at present with respect to orders entered and are having difficulty in making early shipments. Some companies are not promising any shipments on new work under six weeks, while with others the situation is worse. The heavy casting plants have all the work they can conveniently handle at the present time, and the roll shop capacities are so engaged that some of them are running at double turn. The activities of the jobbing foundries continue to gradually expand. Railroad and car shops are providing a steady demand for machinery of various designs which is notably favorable in the case of small tools.

The American Rolling Mill Co., Middletown, O., which is planning a large extension of its output by the erection of a new plant at Middletown or some other Ohio point, is now in the market for the necessary equipment. Figures are being taken on a 40-inch blooming mill, a 24-inch billet and bar mill and upon 16 sheet mills. The sheet mills will be of the 30-inch type and will be among the largest in this respect now used in present practice. A. B. Neuman, formerly connected with the Indiana Steel Co., at Gary, Ind., is the engineer in charge of the improvement.

The engineers who have been preparing the drawings for the large new sheet and tin plants to be erected by the United States Steel Corporation at Gary, Ind., are nearing the completion of their work, and it is probable that these plans will take on final form in a few weeks. As yet no definite steps in the way of placing contracts have been taken on these plants. The erection of sheet and tin plate mills at Gary, while designed primarily to meet the requirements of the western market, will tend to offset any loss in operations that may grow out of the present strike of the Amalgamated Association of Iron, Steel and Tin Workers against the American Sheet & Tin Plate Co., principally in the Wheeling district, where the company is making little or no effort to start its plants, owing to strong union sympathy there.

The borough of Etna, Pa., is considering the proposition of a private company to buy its water and light plant. The offer has been made in connection with the proposal of the company to erect a large water plant upon the Kiskiminitas river to supply a number of the towns in the Allegheny valley.

The city of Pittsburg is making arrangements to secure possession of a site on the South Side, upon which it proposes to erect a new pumping station. The plans of the city contemplate a building to cost about $70,000, in which will be installed pumping machinery and other equipment involving an outlay of about $258,000.

The action this week of the Bethlehem Steel Co. in awarding contracts for new blast furnaces and duplex steel works to the Pennsylvania Engineering Works, New Castle, Pa., is expected to be followed shortly by the placing of other important awards for mill machinery, which are to be a part of the extensive improvements planned for South Bethlehem, Pa. Included in this equipment will be a universal mill, a bar mill and a structural mill. Estimates from builders on these mills are now in the hands of the company.

CHICAGO.

October Sales of Machinery Establish High Mark.

Office of THE IRON TRADE REVIEW, 1328 Monadnock Block, Nov. 2.

The month of October has been one of great satisfaction to most of the makers of machinery and tools, and

branches allied to these industries. The month of September was marked by many good sales of machinery and was a banner month for some of the Chicago houses; the month just closed has proven a worthy successor and has established a high mark for itself in the matter of sales. The well-established makes of machine tools, which almost sell on their name, have, of course, accumulated the largest amount of business, and deliveries are further behind than in the case of the less well-known makes, but the manufacturers of the latter are far from being up-to-date in their shipping departments. Shafting has shared in the general demand, being purchased in large quantities by the automobile industry, which has caused such a congestion in other lines by the large volume of its purchases. One manufacturer of shafting reports that customers are willing to pay the highest price today, who, a few months ago, refused to consider very favorable offers made to them.

A number of capitalists in and around Green Bay, Wis., are interested in the establishment of a plant for the manufacture of steam radiators at Green Bay. Fred B. Warren and A. B. Burns are among those interested in the project.

George Gorton Machine Co., Racine, Wis., is increasing its plant by the addition of two buildings, one a fireproof tool storage building, two stories high, 50 x 60, and an addition to the erecting room, 30 x 60, equipped with a Pawling & Harnischfeger crane. The company is in the market for the following new equipment and desires catalogs covering same: One 3 x 36 turret lathe; one 48-inch planer; boring mill; one 20-inch engine lathe and gear cutter, all motor driven, direct connected with two, 20-volt direct current motors. The power plant, including generator, has been purchased.

NEW YORK.

Business Assuming Normal Proportions—Railroads Buying Heavily.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Nov. 2.

The local machine tool trade reports the month just ended as in many ways the most satisfactory since the resumption of activities. Sales have averaged well and, although with several houses by no means so large as during one or two months when the total was swelled by a few large orders, have shown a distribution that is always welcomed. Here and there, interests are found with which business is again at normal proportions, with others, however, it is still somewhat below that volume, but continues to show improvement. Some further price readjustments are anticipated, particularly on lines which are now offering rather remote deliveries. The heavy buying of railway equipment during the past week apparently did not extend to the machine tool trade, though eventually considerable purchasing by those sharing in the business will develop.

O the completion of the additions to the Waverly warhouses of the Carnegie Steel Co., Waverly, N. J., noted a week ago, a number of heavy machines will be installed. The addition to the main warehouse consists merely in filling out one large corner of the structure, giving it regular shape.

It is stated that among the improvements planned by the International Steam Pump Co., 115 Broadway, will be the construction of a large foundry building at the works of the Deane Steam Pump Co., Holyoke, Mass.

In connection with the elevation of its tracks on Ninth street, at Philadelphia, the Reading railroad has awarded contracts for a brick power plant with steel coal trestle. The contract has been taken by Fred A. Havens & Co., and the building will be located at Ninth and Green streets.

The Pressed Steel Car Co. recently delivered 20 all-steel ore cars, with a capacity of about 130,000 pounds each, to the Lake Champlain & Moriah railroad for handling ore from the Mineville workings of Witherbee, Sherman & Co., Inc., and the Port Henry Iron Ore Co., to the docks and shipping yards at Port Henry.

Two large turbines are to be added to the equipment of the Stanley Electric Mfg. Co., Pittsfield, Mass., necessitating an extension of its boiler and engine rooms.

The properties of the Solid Steel Casting Co., Chester, Pa., will be offered for sale on Nov. 9, by the receiver, William B. Harvey.

Although Atlantic coast ship yards report current business as still light, some increased activity is noted. Further additions are planned to the plant of the Harlan & Hollingsworth Corporation at Wilmington, Del. The Southern Ship Building Co., Tottenville, S. I., has purchased the marine railway of the Neafie & Levy ship yard. The New York Ship Building Co., Camden, N. J., has launched the steel car float Mastodon, which will be towed to its station at New Orleans. The float is 360 feet long, with 50-foot beam and 11-foot depth of hold, and is built to carry 25 cars.

The Maverick Mills, East Boston, Mass., has let contracts for a two and one-half story spinning mill, 130 by 550 feet, and a one and one-half story weave mill, 230 by 340 feet. Lockwood, Green & Co., Boston, are the engineers.

It is announced that the New York Air Brake Co. will equip the 325 locomotives and the 18,047 passenger and freight cars recently ordered by the New York Central, the brake equipment amounting to over $1,000,000.

CLEVELAND.

Extensions Being Added to Plants—Electric Machinery in Demand.

Office of THE IRON TRADE REVIEW,
Browning Bldg., Nov. 2.

The condition of the local machinery market shows little change from that of the several preceding weeks. There is only a fair volume of business in the aggregate, for, with but few exceptions, inquiries are for small lots, although these are rather numerous and steady. Deliveries are slow in most lines and prices are showing signs of improvement.

Work has just been commenced by the Warren City Tank & Boiler Co., Warren, O., in clearing up several acres of new property which it has just purchased from the Perkins estate, and on which it intends erecting a steel building to greatly increase the capacity of its present large tank and boiler plant. The new shop will be steel and concrete, and 150 feet wide by 200 feet long, and the foundations are now being put in for this building. This firm is working day and night, and notwithstanding only two years ago it put up large additions, it finds the new building necessary in order to take care of its increasing business.

The Ideal Electric & Mfg. Co., Mansfield, O., advises that it is receiving a very large volume of orders for its equipment, and has taken contracts within the past 30 days for motors aggregating several thousand horsepower. Its orders include the following: Two 250-kilowatt belted alternators for the Buckeye Mining & Smelting Co., Big Pine, Cal.; one 75-kilowatt alternator for the Turnbull Mfg. Co., Toronto, Canada; nine 15-horsepower slip ring A. C. motors for elevators in the E. M. F. automobile factory at Detroit; fifteen squirrel cage motors for the M. C. Peters Mill Co., Omaha, Neb., sizes three to 60 horsepower; the company is installing individual motor drive in the new mill of the Mansfield Elastic Webb Co., consisting of seventy motors for individual drive on elastic web looms; three 400 ampere

A. C. motor driven low voltage generators for electro-plating service; one 2,500 ampere plating dynamo and two 1,500 ampere plating dynamos. In addition, there are numerous orders for squirrel cage induction motors and elevator equipment. In order to keep up with its orders, the company finds it necessary to run its plant 15 hours per day.

The National Roll Machinery Co., Mansfield, O., advises that it has installed a new galvanizing plant which went into operation Nov. 1.

The J. M. & L. A. Osborn Co., manufacturer of tin plate, sheet iron, etc., advises that its business is somewhat better than that of its best previous year, 1907. Deliveries of sheet metal products, such as this concern handles and more especially tin plate, are very badly delayed at the present writing, and there does not seem to be any relief from this condition in sight.

The Standard Boiler & Plate Iron Co., Niles, advises that it has just completed a 160-foot extension to its present plant.

The Garry Iron & Steel Co. advises that its business has been very satisfactory during the past few months. The company has extended its field of operations, and at the meeting of the board of directors held recently, Samuel Siddall, treasurer of the concern, was also elected to the vice presidency. J. C. Wicks, formerly office sales agent, was elected secretary and manager of sales. The company is now carrying the largest stocks of flat sheets, black and galvanized, for roofing, eaves trough, conductor pipe, etc., in its history.

As a means toward concentrating its work and getting in better touch with electric motor car materials the Anderson Carriage Co., Detroit, has closed the purchase of the Elwell-Parker Electric Co., of Cleveland, the largest manufacturer of electric automobile motors in the world. The local concern was capitalized for $400,000 and employed several hundred men. The works will remain in Cleveland, but the management will be from Detroit hereafter. With this acquisition the Anderson Carriage Co. will be manufacturing practically every part of its electric carriage except the wheels and tires. With a view to extending its scope, the company recently increased its capital stock to $1,000,000.

The export of copper from Japan in 1908, according to a consular report, was 35,700 long tons compared with 31,800 in 1907.

MILWAUKEE.

Oxhydric Process Used to Clear Away Wreckage in Power Plant.

Milwaukee, Wis., Nov. 2.—The oxhydric process of cutting steel and iron, a European invention, rights to which are owned by the American Oxhydric Co., of Milwaukee, was given its first public test last week, and the results obtained were eminently satisfactory. The explosion of four boilers in the new power plant of the Pabst Brewing Co., wrecking more than half of the plant, gave occasion for the use of the process in clearing away the debris, which consisted largely of tangled masses of tubing, shafting, boiler plates, etc., mixed with brick and stone. By the oxhydric appliances the steel and iron was cut into short lengths and hauled away in a remarkably short time. Some of the fragments weighed from 10 to 20 tons, and without the oxhydric process of cutting it into lighter and smaller pieces, the wrecking work would have assumed mammoth proportions. Sig. Lulli, the Italian scientist who is associated with the American Oxhydric Co. as expert, was seriously hurt while applying the process, a section of wreckage falling from under him.

Kearney & Trecker, machine tool builders and milling machinery manufacturers at West Allis, Wis., have started construction work on a large addition to the plant on Sixtieth and National avenues. The foundations will be completed this fall and the superstructure next spring. The dimensions of the addition are 170 x 160 feet, and it will be connected directly to the present shop. The building will cost $35,000 and the equipment somewhat more than this figure. Kearney & Trecker recently completed work on a new central power plant costing $15,000. In 11 years the concern has made remarkable progress, the original force of six men now numbering nearly 350.

The Manitowoc Boiler Works Co., Manitowoc, Wis., is working on an order for one of the largest pieces of machinery ever produced in Wisconsin. It is a large cement burner or "shell", for the Chalmers & Williams Co. of Missouri. It is 130 feet long, tubular in shape, with a diameter of 10 feet. It weighs more than 200,000 pounds and three flat cars will be required for the shipment. It will cost $15,000.

The F. J. Greene Engineering Co. of Racine, Wis., has started work on a large machine shop, two stories high, doubling the present floor space. The new plant will be devoted mainly to the piano stool department.

Two carloads of machinery are bing shipped each week by the Miracle Manufacturing Co. of Minneapolis, Minn., to Eau Claire, Wis., where it is being installed in the plant of the Northwestern Steel & Iron Co. About 20 carloads will be required. The Northwestern's 15,000 square foot addition to house the Miracle machinery department is going up rapidly and will be completed before Dec. 15.

The Appleton Machine Co. of Appleton, Wis., recently installed six Wendt automatic wire-weaving machines in the Holyoke, Mass., Paper Mill Machine Co.'s plant, making 12 Wendt machines now in operation there.

The Bicknell Manufacturing & Supply Co. of Janesville, Wis., has bought a tract of two acres at Beloit, Wis., and proposes to erect a new plant, 48 x 160 feet, one story high. The company will engage in the manufacture of heavy machinery, the exact nature of which is being withheld until all arrangements are made.

BUFFALO.

Machinery Firms Doing Special Work are Crowded With Orders.

Office of THE IRON TRADE REVIEW, 932 Ellicott Square, Nov. 2.

Machinery makers are busier this week and dealers are in receipt of more substantial inquiry. Railroads are apparently a little more interested in shop equipment. Concerns doing special work on specifications are crowded with work and the automobile and gas engine builders continue extraordinarily busy. Automobile builders are placing numerous orders for machinery, not alone in Buffalo but particularly in Central New York. Confidence in the general machinery trade conditions is indicated by the appearance of numerous new industries which are engaging in mechanical work.

The Buffalo Gasolene Motor Co. is building a new type of speed engine for 1910 which has several new features making what is believed to be a very substantial improvement in the marine engine field. The 1910 engine is a V-type motor, 8-cylin-

der, double ignition and positive oiling system of improved character. The design indicates greater speed power with concentration of space required for the engine. The Buffalo company has taken orders for 1,500 automobile engines from several leading makers.

The Augustine Automatic Rotary Engine Co., Buffalo, recently completed the construction of a 125-horsepower automatic rotary engine for Dodge, Bliss & Co., of Jersey City, and installed it at the Tonawanda plant of the company. The engine stands only 36 inches high and measures 32 inches across base with 4-foot fly-wheel. Up to date the engine has met all requirements. The company has booked an order from the Kinne Laundry Co. for one 20-horsepower automatic rotary engine.

MARYLAND STEEL PREPARES FOR HEAVY ORE RECEIPTS.

Baltimore, Oct. 30.—It is announced that the Maryland Steel Co. has awarded contracts for the improvement of its ore handling facilities at Sparrows Point, where the construction of an open hearth steel department to operate with the present Bessemer department under the duplex process is now well under way. The Brown Hoisting Machinery Co. will install two 7½ ton rapid unloaders, with a capacity of 500 tons per hour each, and contracts have been let for a reinforced concrete bulkhead, 45 x 500 feet, with provision for its later extension. Contracts have also been placed for a variety of accessory equipment incidental to the larger plant.

This improvement in ore-handling facilities at Sparrows Point, in connection with the Reading improvements at Philadelphia, evidences the rapid manner in which the ore receiving ports of the Atlantic are preparing to meet the increased demands upon them.

The Grafton Machine & Iron Works, of Grafton, Wis., has filed an amendment to articles of incorporation changing the name to Globe Foundry Co.

New York Central lines in September handled the largest number of loaded cars in their history in a similar period, 1,720,794.

The Standard Metal Co., Bridgeport, Conn., manufacturing various metal specialties, has filed final notice of dissolution.

ADMINISTRATIVE COUNCIL

Of National Metal Trades Met in Cleveland.

The national administrative council of the National Metal Trades Association held its semi-annual meeting in the Association's offices in Cleveland Oct. 28. Those present included: President, H. P. Eells, who presided over the deliberations; first vice president, J. H. Schwacke, of Philadelphia; second vice president, H. W. Hoyt, of Detroit; treasurer, William Lodge, of Cincinnati; commissioner, Robert Wuest; councillors, B. B. Quillen, of Cincinnati; R. D. Reed, of Westfield, Mass.; Herbert Rice, of Indianapolis; E. P. Robinson, of East Boston, Mass.; Henry D. Sharpe, of Providence, R. I.; M. H. Barker, of Boston; M. K. Bowman, of New York City; F. C. Caldwell, of Chicago; Paul B. Kendig, of Seneca Falls, N. Y.; L. H. Kittredge, of Cleveland; and W. A. Layman, of St. Louis.

Reports of the officers for the previous six months were received and proved satisfactory. Considerable part of the time was devoted to discussing advanced methods of education as applied not only to apprentices, but also to what are termed "handy men," or men desirous of improving their earning capacity. After an auto ride the visitors were entertained at the Roadside Club, one of Cleveland's noted places of entertainment. In the evening a banquet was tendered by the Cleveland branch in the banquet hall of the Cleveland Athletic Club, which was presided over by W. C. Bruce, President L. D. Wiening being ill.

LAKE FRONT ORE DOCKS FOR CLEVELAND.

A dispatch from Pittsburg announces that the Pennsylvania Railway engineers have completed plans for building concrete and steel docks at Cleveland at a cost of approximately $4,000,000 for the accommodation of the larger iron ore shippers whose vessels are too large to be properly handled at the docks along the Cuyahoga river. It is understood to be the intention to construct the docks in the west breakwater. Work will be begun in 1910. For the past four years Cleveland has suffered as an ore receiving port owing to the fact that all of its docks are in the inner harbor. The new plan contemplates the dredging of the west breakwater to meet the needs of the largest carriers.

Little information concerning this project is to be obtained in Cleveland beyond the admission by those close to the company that the Pennsylvania system has the improvement in mind. The telegram seems to be substantially correct.

GREAT LAKES ENGINEERING WORKS MEETING.

The annual meeting of the Great Lakes Engineering Works, Detroit, was held on Oct. 26. Officers were elected as follows: Antonio C. Pessano, president and general manager; George H. Russel, vice president; John R. Russel, vice president and treasurer; H. W. Hoyt, vice president and secretary. These with Joseph Boyer, Henry Ledyard, William G. Mather, Ogden P. Letchworth and Robert E. Plumb constitute the board of directors. The general report was most satisfactory to the stockholders, showing the company to be in excellent condition. After deducting the recent cash dividend and setting aside a liberal amount for the reserve fund, the surplus for the year ending Aug. 31, 1909, shows $1,014,861.

PITTSBURG COAL AND COKE SHIPMENTS.

The statement of coal and coke shipments in short tons originating on the Pennsylvania Railroad Co.'s lines east of Pittsburg and Erie, for the week ending Oct. 23, 1909, compared with the corresponding week in 1908, is as follows:

	1909.	1908.
Anthracite, short tons.....	125,493	120,450
Bituminous coal, short tons..	674,761	736,554
Coke, short tons.....	291,936	164,875
Total	1,092,190	1,021,879

The total shipments originating in this territory over the present year to date, compared with those of last year are as follows:

	1909 Year to date.	1908 Year to date.
Anthracite, short tons....	3,938,421	4,163,779
Bituminous coal, short tons.	29,647,927	27,070,636
Coke, short tons.....	8,929,385	5,620,934
Total	42,515,733	36,855,349

The Wilkes Rolling Mill Co., Sharon, Pa., has signed the puddling scale of the Sons of Vulcan and has resumed operations after a shut-down of several months.

The annual meeting of the American Steel Foundries will be held in Jersey City, Dec. 3. The report of earnings for the year ending July 31, 1909, will be issued before Nov. 15.

THE COMPARATIVE VALUES OF VARIOUS COATINGS AND COVERINGS FOR THE PREVENTION OF SOIL AND ELECTROLYTIC CORROSION OF IRON PIPE[1]

One of the greatest problems now confronting the modern engineer is not so much that of the design or erection as that of the preservation of the iron or steel structures which must endure in order to become true monuments to his skill and genius. The three factors—design, erection and preservation—are each and all essential to a metallic structure that possesses both strength and endurance, but, unfortunately, the last but not least important factor, viz., preservation, has been too often made subservient to the first essentials of design and erection.

The want of knowledge pertaining to the causes of the corrosion of metallic structures, as well as to the comparative values of preservative coatings or coverings, may be partly due to the fact that the subject of the preservation of underground metallic structures has been almost totally ignored by engineers until recent years.

Need of Protection Urgent.

It is only within the last 15 or 20 years that the engineering world has experienced numerous disasters from the economic and other view points, directly traceable to the use of the earth as part of an electrical circuit. The corrosion of metallic structures by electricity in the form of stray currents has done more to awaken the engineer and scientist to the urgent need of protection than any other condition of affairs relative to iron or steel structures. So many examples of corrosion of underground metallic structures have been cited that the engineering profession has been compelled to devote considerable study to the rather neglected question of the corrosion of iron and its prevention. This study of the corrosion of iron has produced a number or theories seeking to explain the various associated phenomena and has also created a demand for preservative compounds designed for the prevention of rust and of electrolytic corrosion. The demand has been met by a supply of such variegated character that as yet the engineer is "much at sea" in endeavoring to select the most efficient preventative of the corrosion of iron and steel.

Other methods, which have been employed to combat the corrosion of metallic structures, but do not involve the use of some coating or covering for the purposes of preservation, will not be considered in this paper. The coatings designed for the prevention of iron corrosion have been classified in various ways by different authorities, but for the purposes of this paper the protective materials will be dealt with according to their general physical and chemical characteristics. Coatings and

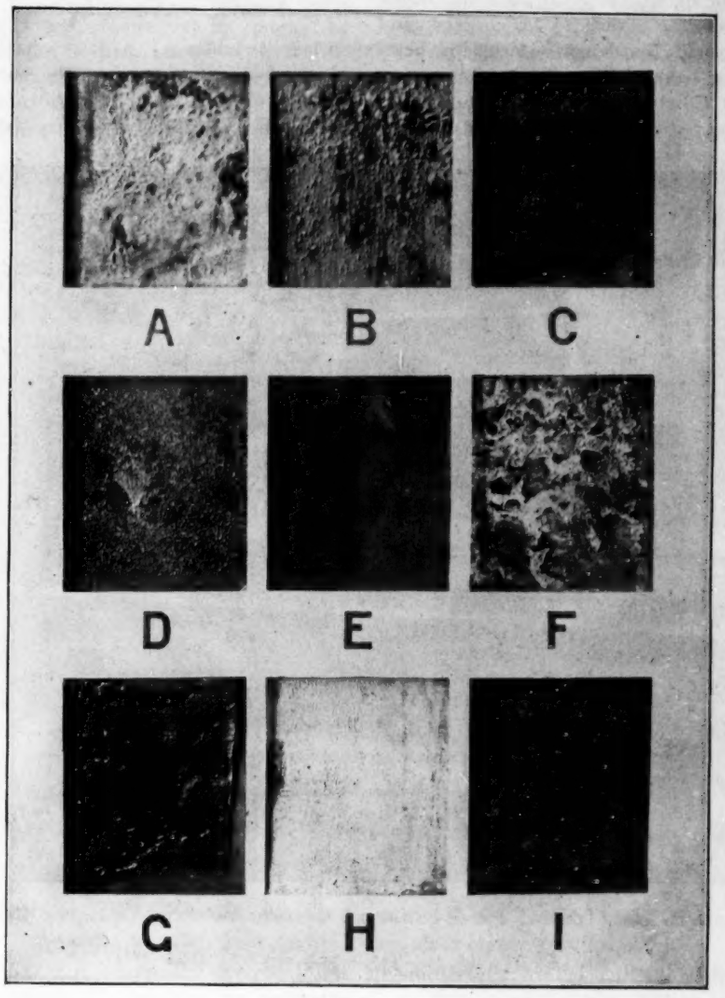


FIG. 1.

Fig. 1 serves to show the appearance of most of various types of deterioration to which coatings for the prevention of corrosion are subject.

A shows a coating undergoing complete decomposition.

B gives the appearance of a paint film being broken by the formation of bubbles or blisters containing gases or solutions beneath the coating.

C is a view of a covering through which water and electrolysis have permeated with the result that there has been formed considerable rust, which is forcing the film away from the metal.

D exhibits the pitting effect upon a coating, produced by the decomposition of one or more of its constituents, or in some other manner.

E represents a well covered metallic surface over which the paint remains practically perfect.

F shows the appearance of a coating undergoing failure by flaking or peeling.

G portrays a film of a dip compound which is striking from the edges of the metal that it is designed to cover.

H serves to give the general appearance of a compound which has been wrinkled badly by the action of electrolytes, etc., upon its surface.

I depicts a covering which is "alligatoring" or showing a tendency to form fissures and to crack at the surface.

[1]Reprinted by courtesy of Illinois Gas Association.

coverings might be divided into the following classes and sub-classes:—

(1) Coatings of a liquid nature, consisting of one or more substances dissolved or mixed in one or more liquids of a volatile or oxidizable nature.

(a) Coatings which are applied cold by brushing, by spraying or by dipping the article to be covered, and harden by natural oxidation or combination of their constituents.

(b) Coatings which are applied cold or hot by brushing, by spraying or by dipping the article to be covered, and are usually hardened or dried by heating or baking.

(2) Coatings of a solid nature, consisting of organic compounds which must be melted before application to metal.

(a) Coatings which are applied by dipping articles to be covered in melted compounds and harden by cooling.

(b) Coatings which are applied by dipping articles to be covered in melted compounds and harden by cooling, oxidation or combination of one or more of their constituents.

(3) Coatings consisting of inorganic compounds such as alloys, oxides or silicates, fused or deposited upon metal.

(a) Coatings of metal applied by dipping in a molten bath or by electrolytic means.

(b) Coatings of oxides formed on or with the metal by various processes.

(c) Coatings of silicates formed on or with the metal by various processes.

(4) Coatings consisting of compounds used with wrapping materials or other substances.

(a) Coatings applied by wrapping with a material saturated with a compound.

(b) Coatings applied by encasing metal in mixtures of cement and other substances.

Details of Classification.

Class 1 embraces a large part of the paints used to prevent the corrosion of iron and steel. Naturally, most all of the so-called protective paints fall into this classification. We have mixtures of inorganic pigments, such as red and white lead, zinc oxide, iron oxide, numerous silicates, etc., with raw or boiled linseed and other oxidizable or volatile oils; mixtures of lampblack, graphite and similar pigments with oxidizable or volatile oils; mixtures or solutions or organic compounds, such as coal tar pitch, asphaltum, mineral pitch, rubber or wax with or in oxidizable oils such as linseed, or volatile oils such as naphtha, carbon disulphide or benzine; mixtures or solutions known as varnishes, consisting of gums or resins dissolved is oxidizable or volatile oils. Practically all liquid combinations of organic or inorganic compounds with liquids of a volatile or oxidizable nature which might be hardened in a natural manner or by the application of heat would fall into the first class.

Class 2 comprises most all of the so-called "dips." In this class would fall such compounds as pitches, obtained from the by-product tars in the making of coal or carburetted water gas, or from the distillation of oils; mineral rubbers or pitches, such as elaterite, gilsonite, etc., asphaltum, waxes and numerous other solid organic bases; alone or mixed with oils and other compounds to give a solid material which must be melted before application to a metallic surface, where it can harden by cooling and oxidation or by combination of its constituents.

Class 3 includes coatings or coverings such as zinc, applied or "galvanized" to the metallic iron in a molten or electrolytic bath, or any other metal or alloys; oxides of iron or of other metals formed on the surface of the article, similar to the formation of black oxide of iron by the Bower-Barff process, of which a description is given in the Sept. 16 issue of THE IRON TRADE REVIEW; and all silicate and other coatings which are fused on or made to combine with the iron itself by heating to a high temperature.

Class 4 embodies all coatings or coverings of Classes 1 and 2 which

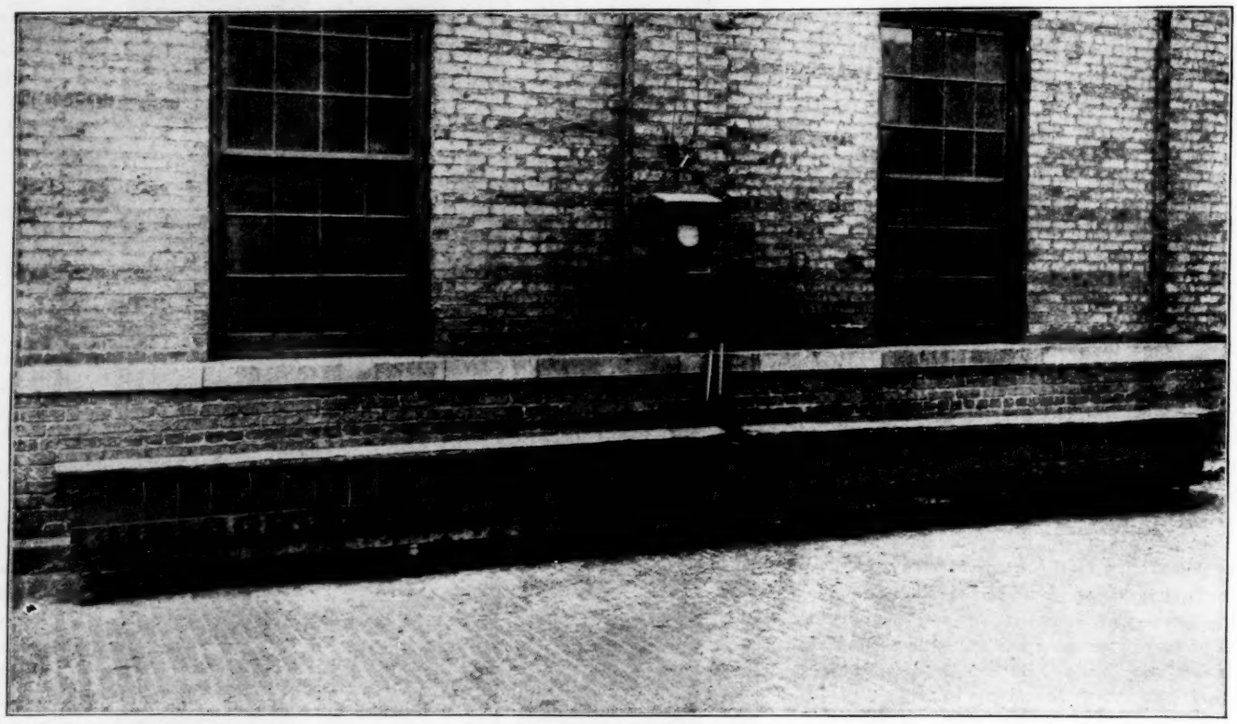


FIG. 2—SHOWING GENERAL VIEW OF APPARATUS USED IN ELECTROLYSIS TEST.

are used in combination with some wrapping material such as cloth, glazed paper, unglazed paper, tar paper, special sheet material and coatings or coverings of a bulky nature, such as concrete, or mixtures of organic bases with inert material of the nature of sand, pebbles, or finely ground stone.

Some coatings or coverings may be placed in more than one class subdivision, owing to the fact that they are susceptible to more than one method of application.

Electrolysis Tests.

A series of experiments were made with various coverings, to determine the resistance to electrolytic action. These experiments form the main subject-matter of the paper.

The electrolysis samples which were tested were coated pipe, about 27 inches long and 1¼ inches, internal diameter. The test sample pipes resembled wrought-iron pipe as regards the general fibrous structure.

The apparatus used in the electrolysis test is shown in Figs. 2, 3, 4 and 5.

Fig. 2 gives a general view of the boxes, ammeter, fuse, switch cabinet and wiring.

Fig. 3 is a diagrammatic sketch of the wiring and circuits involved in the electrolysis test.

Fig. 4 shows the electrical circuits upon which certain soil corrosion tests depended.

Fig. 5 shows a front elevation of one of the test boxes.

Fig. 6 gives a cross-section view of the box shown in Fig. 5.

All pipe samples were carefully cleaned. The amount of materials used in each coating was carefully recorded and a determination made of the average thickness of individual coverings. So far as was possible, each coating was allowed to cover the pipe to a thickness governed mainly by the consistency, adhesiveness and other natural properties of the protective material. In general, the paints or dips were applied so that all useless excess was reduced to a minimum. Each pipe was covered in such a manner that to the naked eye each type of coating appeared as perfect as it was possible to make it.

In nearly every case two numbered sample pipes were covered in an exactly similar manner with any given coating or corrosion preventative. The odd or lower numbered test pipe was placed in the box containing clay soil, while the even or higher numbered test pipe was subjected to the action of cinder soil in the second box.

A detailed discussion of the comparative values of various pipe coatings for the prevention of soil or electrolytic corrosion of iron pipe could only result into an expansion of this paper into one or more books.

No Cure-All.

It would be rash presumption upon the part of any writer to attribute to any given coating all of the virtues which a protective material must possess in order for it to be an efficient preventative of soil or electrolytic corrosion. No preservative paint or dip was found which might be considered a panacea for all the ills to which metallic structures fall heir.

Much data has been accumulated, concentrated and given by means of figures, plates and charts in this paper. Let us endeavor to ascertain what preservative materials are favored by the preponderance of the evidence.

It has been demonstrated that pipe coatings, as a general rule, are subject to more or less rapid decrease in their resistance to the passage of electrical currents or increase in their permeability to soil waters. This is due partly to the following facts: First—That the paint or dip used may initially contain minute voids or bubbles. Second—That the protective base itself may decompose, and third that many methods of application, although apparently giving perfectly covered pipes, may in reality fail to properly coat the metallic article in an efficient manner.

As a result of the test, data obtained and the observations made upon various preventatives of corrosion, it seems probable that few types of covering can withstand the effects produced by high (100 volts) differences of potential between the covered pipe and the surrounding soil waters. Even comparatively low (1.5 volts) potential differences existing over a protective coating have been found to cause decided deterioration of the paint or dip.

It is true that a number of sample pipes came through the electrolysis test without showing any great evidence of corrosion on the surface of the metal, but we must not neglect to note the final condition of the protective material, which, in numerous instances, was on the verge of failure as a preventative of corrosion. A few of the sample pipes, however, were in good condition at the end of the electrolysis test.

Most all wrapping materials showed a decided tendency to rot. Muslin cloth seemed most susceptible to decomposition, while perhaps buckskin manila paper gave the least evidences of detorioration.

As a whole, many of these coatings and coverings which broke down in the electrolysis test would doubtless add considerable to the length of life of a pipe placed under milder conditions. In all fairness we must not judge comparative values of the preservatives entirely by their actions in the electrolysis test.

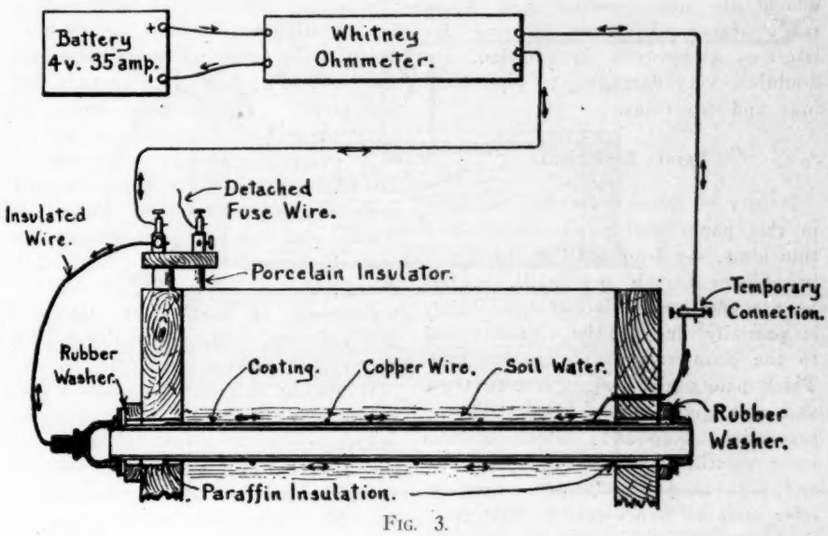


FIG. 3.

Clay Soils Protective.

Soils of a clayey or argillaceous nature seem to play an important part in the preservation of a coating by forming a tenacious mass around the protective material and preventing the ready movement of moisture or electrical currents through the pasty clay which in the electrolysis test hung as an adherent, hard, and more or less dry accumulation around the sample pipe.

A careful comparison of these sam-

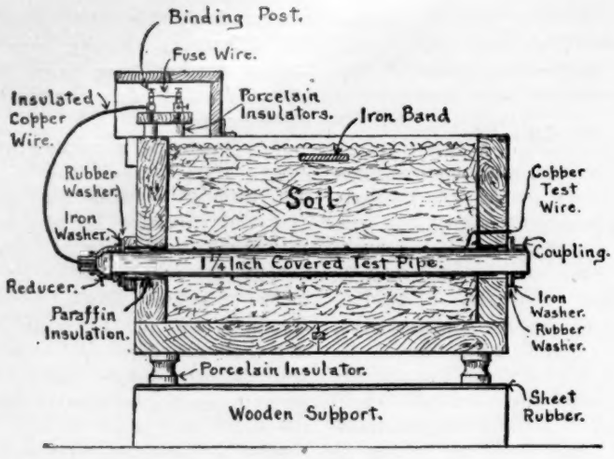


FIG. 4.

ple pipes which were buried in clay soil, with those covered by cinder soil, together with the relatively high resistance of clay, will serve to validate the preceding statement. Soils which are quite porous and allow ready access of waters carrying deleterious electrolysis in solution, are doubtless very damaging to pipe coatings and coverings.

Paint Inefficient.

It may be noted from data obtained in this paper that paints which give thin films, say from 0.001 to 0.003 inch in thickness, are practically useless as preventatives of electrolysis. This is partially due to the thinness and to the properties of the constituents. Thick paints give better results. Dips, as a rule, give the best results. Those protective compounds which contain little volatile matter, are applied hot and are baked on the pipe, seem to offer metallic structures the best practical protection against soil or electrolytic corrosion.

Coatings such as black oxide of iron produced by the Bower-Barff process, metals or alloys, and siliceous enamels may greatly add to the life of a pipe under ordinary atmospheric or soil corrosion, but, with the possible exception of siliceous enamels, afford little protection against electrolysis. The writer experimented with a number of siliceous coatings or enamels, which were fused upon the pipe, but was unable to produce satisfactory test pieces. The enamels which are fused on at high temperatures are not very practical coatings for water or gas pipes, as they are expensive, difficult of application, are subject to cracks and flaking, only protect the main body and cannot be applied in the field.

Concrete of itself does not offer any solution, as it is usually readily permeable to water.

Wrapping materials in general add nothing directly to the insulative character of a given coating, and the best that can be said for them is that they aid in holding the material in place when it is subjected to knocks which would, under other circumstances, cause an abrasion or expose the metal.

We find that 11 out of 36 paints, dips or other coatings showed a determinable decrease in resistance or increase in porosity during a 70-day immersion of the resistance and porosity test samples in distilled water. All others maintained a resistance, as ascertained by the porosimeter, of over 2,000,000 ohms.

Clay soil caused a somewhat more rapid deterioration of 12 coatings and coverings than did the distilled water.

Under the influence of cinder soil, it may be noted that a greater number of paints, dips, etc., show signs of failure, and these with greater rapidity than did those buried in clay.

Loam soil deteriorated about the same number of preservative materials as clay soil, but those affected at all seem to have deteriorated with greater rapidity.

Coal Tar Most Efficient Base.

Many of the pipe coatings and coverings excelled or equalled others in some respect or property, but were subject to one or more disadvantages which lessened their all-round value.

A comparison of costs of protective materials, with their general behavior under all conditions, leads one to the conclusion that, all things considered, paints or dips containing coal tar or its products as a base furnish the most practical solution of pipe protection against soil or electrolytic corrosion. They appear to be the cheapest as well as the most efficient compounds, while other manufactured products such as elaterite and asphaltic dips, are, no doubt, good in some cases, yet, to judge by the samples submitted and tested, they are prone to failure on account of their tendency to become brittle, and to the apparent presence in them of small amounts of matter readily dissolved or decomposed by soil waters. Pure coal tar

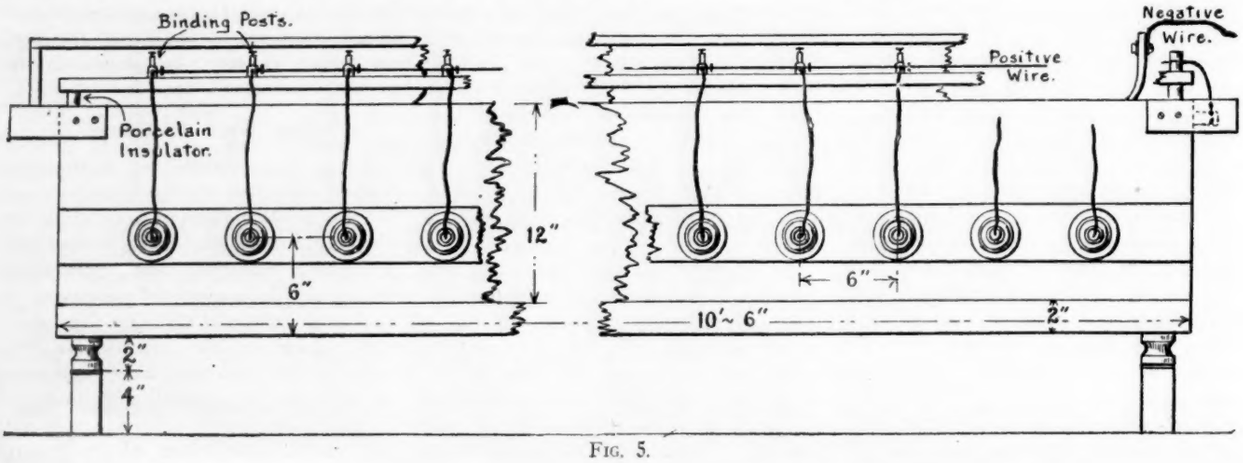


FIG. 5.

pitches do not seem to contain any constituents which are readily dissolved or decomposed by soil waters, but, of course, they may be open to the same objection—namely, brittleness—if not properly prepared.

Coal tar products usually cling to pipe better than the majority of dips on the market. Coal tar pitch also seems to be of all dips the least affected by oxidation. Its unchanging character in soil waters has been satisfactorily established in many cases.

The discovery of an absolutely efficient material and method for preserving from electrolysis seems to be only a remote possibility at the best. The writer feels that, were he to propose some good preservative and practical manner of coating service pipe, he could not feel assured that it would do more than delay the ultimate corrosion of a pipe subject to the action of stray electrical currents. Even if the protective compound could withstand the strains naturally put upon it, it seems likely that in practice it would fail of its purpose.

Matter of Great Importance.

The old saying, "A chain is no stronger than its weakest link," was never used more relevantly than when applied to a pipe coating or covering. Too much stress cannot be laid upon the necessity for the proper application of even a fair protective material. One bare spot in a line of apparently covered pipe only concentrates the whole corrosive effect of stray currents and in reality probably causes the formation of a hole to the interior of the metallic body in a shorter time than if the pipes had been uncovered. It behooves us, therefore, to employ careful workmen and competent inspectors in coating service pipes either at the foundry, at the shop or in the field.

As a result of an impartial consideration of all of the preservative materials, their properties, costs of application and behavior under all conditions, the most practical and efficient (if well applied) type of covering which suggests itself is that of a clean coal tar pitch, free from water, acids or soluble mineral matter. Such a pitch should be as hard as it is possible to make it without having a decided brittleness at ordinary temperatures. It should not crack when struck a hard blow. Pipes upon which such a coating is to be placed should be smooth, free from moisture, rust and loose scale or foreign matter of any description. Burrs or other projections of metal should be filed down before coating pipe, as these, if left, would, when surrounded by wet soils, probably provide a means of egress for possible stray currents.

Summary.

After a careful consideration of each and all of the protective materials which were tested for their ability to prevent soil or electrolytic corrosion of iron or steel pipe, the following conclusions have been drawn. It is believed:—

1. That paints, as a rule, do not prevent electrolysis, but some, no doubt, have a beneficial effect in curtailing soil corrosion.

2. That the appearance to the naked eye of a paint film is no indication of its permeability to water.

3. That corrosion of metal may take place beneath a paint film without apparently affecting the appearance of same.

4. That the metallic body before being covered must be smooth and free from rust, moisture, loose scale and foreign matter, in order that it be preserved.

5. That, in general, dips applied hot are better than paints and probably furnish the key to solution of the prevention of corrosion.

6. That concrete of itself is not an efficient protection against electrolysis.

7. That ingredients such as rubber, tallow, lime, etc., usually have a deleterious effect upon the efficiencies of coal tar pitch.

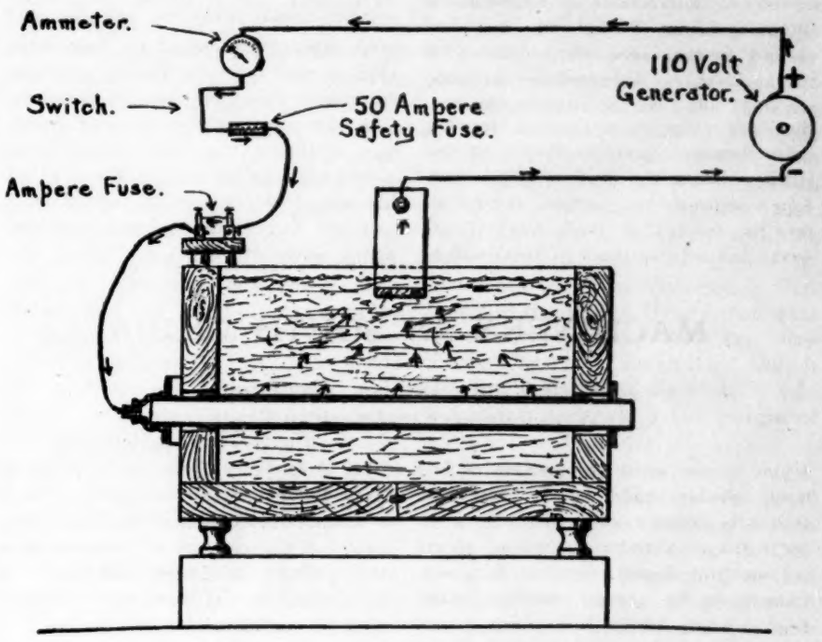


FIG. 6.

APPRENTICESHIP SCHOOL OF THE YALE & TOWNE MFG. CO.

The Yale & Towne Mfg. Co. maintains at its factory at Stamford, Conn., a training school for apprentices, which has recently been reorganized to meet the improved conditions brought about by the advances in modern factory practices.

Candidates are accepted who are 16 years of age and over, subject to the plan and requirements shown in the following brief comparison of the old apprenticeship methods with those now employed in the training room.

Under the old system there was no examination prior to acceptance. Under the new system, the candidate is examined to ascertain what his general education has been, and he will not be accepted unless he can read, write and perform certain requirements in arithmetic.

Under the old plan an apprentice was put directly into the shop at the start. Under the new plan, he is given a three months' trial in the training room and if he shows no aptitude for the trade he is dropped.

Under the old plan the apprentice was put directly into the machine-shop under the foreman, who was supposed to give

him enough time to educate him properly. As a matter of fact, the foreman is always so busy that he has little or no time for apprentices, and often he has no ability to teach. The apprentice therefore became dependent upon the journeymen, and often picked up his knowledge in a hap-hazard sort of way. Under the new plan, a separate training room has been organized in which all apprentices spend the first two years under the close and constant supervision of a competent instructor. Then the apprentice is placed in the machine shop proper, where he must rub elbows with the journeymen, but still under the supervision of the apprenticeship director.

Under the old system, the boys received no instructions in mathematics, or in the theory of mechanics, and were obliged to take mechanical drawing at the night school operated by the company. Under the new system, instructions are given in mechanical drawing, in mathematics, and the theory of mechanics, during the daytime at the company's expense. A certain amount of time is devoted to these studies each week, and only so much of them will be given as will be of practical value to the boy in the trade he is taking up.

The rates of compensation for the different periods of the four years' course are as follows: First six months, 8 cents per hour; second six months, 9 cents per hour; third six months, 10 cents per hour; fourth six months, 11 cents per hour; fifth six months, 12 cents per hour; sixth six months, 14 cents per hour; seventh six months, 16 cents per hour; eighth six months, 20 cents per hour.

The candidate is required to put in 1,400 hours each six months, and is on duty during the regular working hours of the factory.

Under the new scheme the apprentice's rate of wages are slightly higher at the beginning than under the old plan, and lower toward the end of the apprenticeship, so that the total amount of wages received is about the same in each case. The higher rate at the beginning, doubtless, will have the result of attracting a better grade of boys. When a boy has served his time in the school he is awarded a certificate of apprenticeship and a bonus of $100.

MACHINERY IN SOUTH CHINA

Review of Present Conditions With Reference to American Trade

One of the most comprehensive and most valuable papers which have come from the bureau of manufactures in the form of consular and trade reports is one by Consul General Bergholz, Canton, on the general economic situation in south China, and which covers so completely almost every class of machinery and allied products that we reproduce it entire:

American travelers in China write of its immense resources and its great population, deducing therefrom that there are untold possibilities for the disposal by their countrymen of products and of machinery of every description. The only reason the United States does not reap the benefits therefrom, they assert, is lack of enterprise among American merchants and manufacturers compared to those of England and Germany. To be sure, Americans may not be making the most of their opportunities, but on the other hand travelers from England and Germany also complain of the backwardness of their respective countries as compared with the United States. Spurred on, then, as all countries are, by keen rivalry, the lack of results must be attributed to something else than lack of enterprise, and rightly so.

For 3,000 years China has been going along the even tenor of her way, and it cannot be expected that she will throw off the customs of centuries in a day. What the future will bring is conjectural, so the immediate demands must be considered.

There is not now an active market for machinery. There is a slow trade in printing presses, iron and steel working machines, sewing machines, etc. How small this is may be judged from the customs returns, which value such imports at Canton in 1908 at only $686,924, as follows:

Classification.	Value.
Machine belting	$ 2,290
Electrical materials	39,623
Engine and boiler fittings	3,867
Machinery and parts of	88,775
Sewing machines	9,936
Printing and lithographic materials	8,301
Railway plant and materials	407,038
Telegraph materials	5,950
Water plant and fittings	23 283
Iron and mild steel	8,861
Total	$686.924

The importation of iron and steel manufactures into all China in 1908 amounted to $17,664,935. The largest item was $8,381,100 worth of railway equipment, followed by $4,319,900 worth of machinery. In 1907 the United States supplied to China $2,164,773, and the United Kingdom $2,582,223 of railway equipment, out of a total of $10,139,578. In the same year the United States exported to China $949,234 and the United Kingdom $1,661,286 of machinery, out of a total importation by China of $4,791,937.

Chinese Reproductions—Extent of Guilds.

Some local importers go so far as to say that, although the demand for machinery will increase as China's standard of civilization rises, this demand will be met by the ability of the Chinese to copy any model with the aid of foreign educated engineers. This statement seems plausible when one takes into consideration their marvelous cleverness in imitating and reproducing any article, no matter how intricate, that is put before them. With foreign overseers they are among the best workmen in the world. Many truly great inventions have been taken from them, inventions which are only rivaled by occidental development of steam and electricity.

We will now consider the question of trade openings for machinery in South China, the market for which should develop in a logical manner that can, somewhat, be outlined. Just at present the situation is very complex. Each different trade is organized into guilds, each guild localizing to a large extent in particular parts of a province or city. Thus in South China the center of the pewter industry is Shui Hing, on the West river. Tung Kung, on the East river, leads in the production of coarse matting, and Foochow of lacquerware. So in Canton the shoemakers are largely in one section of the city, the furniture makers, the silk-winding shops, the ivory shops, and jade shops in other sections. Each shop is small, having two to ten workers, and all is done by hand. Under these circumstances the introduction of machinery, which would throw a large number of men out of employment, might, very likely, be at once opposed by the guilds. We have only to look at the nature of their greatest inventions to see whether they were inspired with the idea of making work easier. We owe to them, it is said, the secret of gunpowder, the compass, the making of porcelain, and printing, but did they ever have the desire or incentive to work out a sewing machine or even a windmill or other labor-saving devices?

Preliminary Industries.

The entering wedge, therefore, must be very delicate and must not encroach too oppressively upon existing trades.

Railroads can be said not to do this, as they relieve the producer of the labor of carrying his goods to market, allowing more time for cultivation, and also supplying a new demand for labor in the construction, running, and maintenance of the road. Mining of coal, copper, and iron with their consequent mills and furnaces will be a great stimulus for a new direction to energy among the Chinese in the interior. Factories which will turn out cotton cloths, shirtings, towelings, hosiery, underwear, cement, paper of all kinds, cutlery, and other principal articles of import can be introduced without disturbing present industries. For that reason these must come before power looms for matting, modern machinery for treating silk, plows, shoe factories, and other improvements in the manufacture of their main articles of export and consumption.

With such non-competitive industries firmly established and running with a good complement of men the highest barrier will be crossed, and from then on the introduction of all labor-saving devices will follow in logical sequence. With these factories in good working order the demand for labor will increase and this demand will be filled in the city. Higher wages will be paid, and as men of good ability will be required it is to be seen that the supply of labor will necessarily come from the trades. With the prejudice against machinery disappearing, the shoemaker, furniture maker, and rice grinder will hasten to put in up-to-date labor-saving devices, and when that time comes there will be an excellent market for this kind of machinery.

The experience of Western nations has been that agricultural people are the last to come under the influence of such a new ecomomic order, but it will eventually be left in China in two ways, first by the ability of the city to pay more for products, and secondly by the inevitable emigration of the country youth to try his fortune in the city. Thus in the country, as in the city, the demand will come for labor-saving devices. Irrigation pumps will be introduced, also wooden plows, planting and harvesting machines. Fields will be made larger and new and improved methods of cultivation introduced. All of this rearranging of industrial conditions in both city and country will mean the necessity of doing things on a larger scale with the consequent concentration of capital. Large landowners will develop in the rural districts, where now there are no large areas belonging to one family under cultivation. Each peasant householder has a small plot upon which he raises merely a sufficient quantity of grain or vegetables for his own use or for sale in his or the neighboring village. The lack of roads prevents transportation of produce for any considerable distance, and unless the farmer lives near a waterway he can not hope to reach a market farther than his immediate neighbor.

German and English Control of Trade.

For some time the Chinese demand for machinery will be varied and hard to anticipate. It may be that only one match or ice or cement factory will be built. The firms on the spot will supply the machinery for these early non-competing industries. I do not believe that, during this period of dry nursing of industries, the demand for any one article or line will warrant the establishment by manufacturers of branch offices in Southern China. The present firms in Canton are old established German and English concerns with branches at the principal coast cities in the United States. They have built up a large trade and gained the confidence of the Chinese. Two of the largest firms here, German houses, maintain machinery departments with showrooms and samples of a number of different kinds and makes of machines on display. These departments are in charge of men who know thoroughly what they are talking about and are well acquainted with all the principal lines of machinery in Germany. The heads of the firms understand well the characteristics of the Chinese mind in dealing with them and give credit extending over several months.

Years ago the United States had its merchant princes in China, but they have passed away, the younger generation preferring to invest at home the fortunes made by their fathers in the Orient. No more concessions are likely to be granted in Southern China and what industries will be promoted or factories built depends on the Chinese capitalists. There is no way for a consul to anticipate what the Chinese will do until after public announcement is made, and that, as a rule, would be after estimates had been gotten from European dealers through the agents here. What chance can American manufactures 10,000 to 15,000 miles away have when they know nothing of the demand until the consul sends in a notification, as it takes two and maybe three months even to get in touch with a firm after it announces its intention of buying? It is possible that the machinery will have arrived from Europe even before the proposition of an American firm reaches China.

Dealing with the Chinese Buyer.

Further than this there is little chance of closing a large contract for machinery merely by correspondence, and this slight chance is still further minimized by the fact that the man on the spot knows—what 95 per cent of American manufacturers do not—how to deal with the Chinese buyer. There is little good in sending catalogs and prices to the consul. They are always in English, the prices in gold, and almost invariably, shipping weight and dimensions are omitted. What the Chinese want is the details by which they can determine the cost of a machine laid down in Canton. To find out about these missing details they can not afford to undergo a delay of three months in correspondence with the United States when they can get all information about European machines from the dealers here, who also, naturally, try to convince them that their machines are the best. When confronted, however, with the charge that it would rather sell its own machines than American, a German firm denied it. It said that what the Chinese wanted was the very cheapest machine obtainable, and it was immaterial what machines it sold as long as there was a fair margin of profit.

The trouble with American makes, the firm said, is that no idea could be arrived at from catalogs of the terms and prices laid down in Canton, and that no American firms had taken up with it the proposition to the extent that a definite understanding had been arrived at as to terms. This is rather a strong indictment of American firms, and in reviewing what I have just written it would seem that there were little prospects of a market for American goods here. That, of course, lies entirely with the American manufacturer. What should be done is to establish in common a firm that will handle the best lines and have sufficient capital to weather a long period of slow building up, or, secondly, to have showrooms at Hongkong or Canton for the display of samples, with an aggresive business organization behind it, or, lastly, to send delegations of experts—or better, of manufacturers—to study the field and make thorough arrangements and prices with European firms here. It is to be hoped that the manifest interest shown by the present administration in far eastern affairs will lead to some definite plan

of action by American manufacturers before it is too late.

Cheap Labor Competition.

Added to the difficulty of introducing machinery because of the number of employes thrown out of work is the further one of cheapness of human labor, making expensive machines unprofitable. In China a coolie can be reckoned as a machine who will do a certain amount of work per day, but he has this advantage over a machine in that the latter means a considerable initial expense to acquire, and a constant repair account and liability for serious breakage. A coolie, on the other hand, is merely hired from day to day and the employer is not responsible for depreciation, and when he is worn out another is employed.

How cheap labor is may be imagined when one realizes that it is cheaper to keep and pay coolies than it is to have a horse of equivalent usefulness, or, one might say, horsepower. As a result, therefore, there are no work horses in Southern China. A further idea may be had from the following table of monthly wages (board and lodging not included):

Occupation.	Days per week.	Hours per day.	Rate of wages.
Bakers	6	8	$12.00
Bricklayers	6	9	9.50
Machinists	7	9	13.50
Carpenters	6	9	10.00
Stonecutters	6	9	9.50
Cigarmakers	7	8	12.00
Blacksmiths	7	9	12.50
Machinists	7	9	13.00
Tanners	6	8	5.50
Sewing mach. operators	7	9	4.75
Shoemakers	6	8	7.00

It costs laborers of the classes cited above $1.50 to $2 per month to live.

In passing to the detailed consideration of the future market for machinery the field seems to divide itself into the following large groups: Land and river traffic, mining, agricultural, and constructional enterprises.

Land Traffic.

Carriages and wagons.—It can be said that there will be no demand for western carriages or wagons in South China for years to come. There are no roads wide enough to accommodate them and coolie labor is cheaper than horses. There are innumerable streams and water courses running from the three great rivers of Southern China which fertilize immense districts and by which great tracts of country are irrigated. Neither will there be any demand for automobiles. A few bicycles are in use, but the streets of Canton, never more than 6 feet in width, are cut up by steps and bridges.

Street cars.—There is a project on foot to raze the wall extending round the old city, as was done in Vienna, and run street cars along the broad avenue thus obtained. The alternative is to run them along the top of the wall, which is a very feasible idea. There is also considerable talk of street cars running along the new river bund, which is fast nearing completion. It is not unreasonable to predict street cars in Canton within 10 years.

Railways.—There are 142 miles of railroad in South China constructed and in operation, 42 miles of the Canton-Hankow line whose total mileage will be 822, 30 miles of the Canton-Samshui branch of the same road, 30 miles of the Chao Chow-Swatow road, and 40 miles of the Sun Ning Railway, the termini of the last two mentioned being Kung Yick and Dur Son.

These roads are wholly under Chinese management and the equipment is mostly American. The Canton-Kowloon Railroad (Hongkong), 100 miles, is under construction. This line, though having a Chinese managing director, has a foreign engineer and a foreign staff. Other lines, as the Canton-Amoy road, the Canton-Macao road, and several other branch lines, are projected but have not yet received the imperial sanction. The purchase of rolling stock and railroad equipment of every description will naturally be large, but nothing can be done without having active agents in the field. (The addresses of the managing directors of the foregoing lines may be obtained from the bureau of manufactures.)

River Traffic.

Steam launches.—The market for these in the Canton delta has been referred to in a previous report. Briefly stated the conditions affecting this industry are these: At present the supply of steam launches is far greater than the demand, and on this account there is little prospect of many new ones being built for several years. Added to this, the Cantonese have fully equipped launch-building yards, which construct boilers, engines, and hulls cheaper and better suited to their purposes than can be had from abroad. It has been several years since launch engines have been imported into Canton, and the future prospect of foreign trade along these lines is equally as hopeless. However, there are a few things connected with the launch that are imported, such as the donkey engine, steam gage, propeller, and pump.

Motor boats.—These were also touched on in the report already mentioned. The outlook is far more promising for motor boats. Not only is this style of craft in great demand because of its light draught, but the Chinese have not yet succeeded in duplicating it. The questions of electricity and petrol consumption are too complex. American engines at present have almost a monopoly of the market. Both English and German firms act as agents for American engines and seem to prefer them even to their own motor boats. The simplest style of engine consistent with efficiency is the most popular with the Chinese, as the native engineers do not master the more complex. Added to simplicity should be cheapness, an appeal which Chinese can rarely resist. Eventually, owing to the necessity of shallow-draught boats to navigate far up to the sources of the shallow rivers and in the delta of this region, it is predicted that the motor engine will come into practical and extensive use. The navigation of streams is a very live question with Chinese, who have to depend almost entirely on them for transportation.

Steam dredges.—There are no steam dredges in Canton at present. All dredging is done by hand. A crew of Chinese will equip a small boat with a lift consisting of a grass rope running through a block at the end of a pole suspended above the edge of the boat. Baskets fastened at an angle to a long pole are thrown out, and in pulling them toward the boat they sink into the mud on the same principle as an anchor. The rope is then attached to them and the load is lifted by means of a windlass worked by the feet of three or more coolies and deposited in the boat. This goes on slowly, steadily, and very cheaply, as the mud is sold for fertilizing, but it not very effective. With the demand arising for proper depths at the railway wharves, now being built or in contemplation, there should be a chance to sell one or more dredges. There is also a chance that the river may be dredged from Whampoa to Canton. Whampoa is about 12 miles down the river and is the limit of deep-draught ocean steamers, which transfer their cargoes by lighters to Canton. If this is done, which seems practicable, Canton will cease to be so dependent on Hongkong for foreign cargo.

Mining Machinery.

A short time ago an order was placed with a certain German firm for machinery for a coal mine. It is the first order for coal-mining machinery of any importance to be placed in this province, though one or two antimony mines of small output have been equipped. The extensive mineral resources of this part of China are well known. When traveling in the interior and seeing seams of coal exposed on hillsides those unversed in the ways and views of these people would immediately conclude that the Chinese were unaware of the riches to be gotten at so easily. For ages the Chinese have been reluctant to touch the treasures of the earth. This feeling is fast disappearing among the enlightened, and in the city of Canton it has gone altogether.

Agricultural Machinery.

Irrigation pumps.—Irrigation in this part of China for rice culture is the all-important thing. At present, water is pumped from fields by means of the following device: A wooden trough is made about 4 inches wide, 12 inches deep, and reaching from the water to the top of the bank. Into this are fitted small boards attached about every 12 inches to a belt. This belt runs over wheels at each end of the trough, the lower end of which is in the water. The wheel at the upper end is turned by two coolies, who tread what corresponds to spokes of wheels, only with rounded knobs on the end. This endless chain forces the water up the trough and through little canals into the fields. This is an arduous task and requires the labor of many coolies, who might be much better employed. If an entire neighborhood would get together and import an efficient but cheap American gasoline engine, they would get a much larger supply of water with less labor. Even a windmill would be a decided improvement.

Windmills.—Simple of construction as they are and capable of being put to an indefinite number of uses, the Chinese have never worked out a practical windmill in South China. That they are acquainted with the principle is shown by the small paper wheels which are sold everywhere. To me it seems that a very good market could be created here for these machines. The metal parts only would be shipped out, the wood frame being made here to save freight. Like everything else, it should be as cheap and simple as is consistent with efficiency. Windmills could be used for irrigation pumps, to turn rice fanning, grinding, and cleaning mills, to develop power for making peanut and bran oil, and numerous industries, some of which would spring into existence.

There is little likelihood of their being used extensively for deep-well pumping. There are no deep wells about Canton or data of the rock formation through which such a well would be sunk to reach water. The Chinese always boil their water, and nothing should be done to interfere with this custom.

Plows and Implements.—At present the Chinese use a very crude plow consisting of a beaten iron plate with a single handle and drawn by a water buffalo, which in turn is driven by a rope tied to a ring in its nose. The hoes, rakes, and other small implements are much the same as the American, only more crude and cumbersome. For a drag they have a very primitive arrangement built somewhat like the American and fairly effective. One might thus go down the whole list of agricultural manufactory without finding anything which could profitably be exported to China.

For threshing rice the Chinese have the primitive but effective system of taking a bunch in the hands and beating a frame suspended over a basket and protected on three sides from the wind by a high shield of matting. In some instances a village will combine and build a concrete floor about 40 feet square. The rice straw is spread out on this and oxen driven over it. Those villages prosperous enough to build threshing floors generally have a fanning machine turned by hand for cleaning the grain. This machine is very cheap, of native make, though it has the appearance and ideas of the foreign-made machine, and I think it must be a copy of the latter. It would be difficult under such circumstances to introduce a cheaper or more effective mill.

When a fanning mill is not to be had the Chinese put the unhulled grains in a receptacle and tread on them with their bare feet until they are cleaned, the wind driving away the chaff. During the last few years there have been 9 mills run by steam established in Canton and vicinity. Most of them report plenty to do and as being prosperous. They are located as follows: One each at Chin Tsun, Kow Kong, Yung Ke, and Shek Ki, two at Kongmoon, and three at Canton. At one mill at Canton there are seven machines in operation. Three are of American, three of English, and one of Chinese make. They are of about 10 horsepower each and hull and clean about 360 pounds each per day. The English machines cost about $375 each, while the American cost only $350, but the owners say that the English work a little faster. Otherwise they are about the same. However, they pointed with pride to a large round machine which was styled "Saigon." This was Chinese built, and it was claimed that while it cost much less than the foreign make it did more work. When asked if there would be much sale for the foreign machines, they replied in the negative. Further, were they to get any more western style machines such as they had, they would have them built in Canton, and have some changes made which would improve them. The wages paid in these mills are about 10 cents per day and food.

Some rice floor is being made, but in very small quantities. Wheat flour is more satisfactory and is constantly growing in favor. At present this wheat flour retails at 4 cents per pound in Canton and is mostly imported from the United States, though Australia is making a strong bid for the market. Rice, of course, is the most important agricultural product, and it is probably in the cultivation of it that improvement can be looked for in farm methods.

Sugar cane.—This industry is fast dying out in this section of the country, largely through inferior methods of cultivation. The slight chance of an occasional sale of a small mill will constantly decrease unless something radical is done to revive the industry.

Bean presses.—One Chinese firm essayed to import bean presses from England to press out the oil and sell the cakes. They imported two of 10 horsepower each, costing about $2,000 a machine. They seemed to work all right, but when it came to selling the output the natives would not buy the cakes because they were round instead of the traditional square shape.

(Continued in next issue.)

The first consignment of 60,000 tons of steel rails has been received at Pensacola, Fla., from Birmingham to be exported to Uruguay, where an American syndicate is building a railroad.

The output of coal in West Virginia for the year ending June 30, 1909, was 41,851,403 tons.

SPARK PICTURES AS A MEANS OF STEEL ANALYSIS

The difficulties experienced in ascertaining the composition of the steel samples accumulated in factories are universally recognized. Microscopic metallography, according to the process first suggested by Le Chatelier, allows, it is true, the composition of steel samples to be determined by a glance through the microscope, but this method, valuable though it be, requires on the part of the operator, a considerable amount of skill and practice, while entailing an extensive mechanical preparation of the sample, viz., cutting, planing, milling, grinding and polishing. Chemical analysis obviously is too complicated to be used in factory practice.

Max Bermann, an engineer of Budapest, has made a discovery which is likely to change our present metallographic methods, viz., that sparks produced by grinding iron with an emery disc are characteristic of the composition of the sample, thus showing directly whether this is soft steel (wrought iron), medium or hard carbon steel, manganese steel (ordinary tool steel), tungsten steel, tungsten-chromium steel (high-speed steel), etc.

The sharp edges of emery crystals detach minute chips from the metal surface, at a considerable cutting speed, heating them to redness by the conversion of mechanical work. These incandescent chips projected by the emery disc, are called "grinding sparks." The loosened emery crystals, though being thrown off in their turn, are by no means incandescent, and hence cannot be confused with these sparks.

The path of the spark from its origin to its extinction forms a luminous line called a "spark ray". Its length is extremely variable, large sparks flying some distance, while smaller ones are projected only some centimeters or millimeters. The size of the grinding spark mainly depends upon the size of the emery grain, the cutting speed, kind of metal, and the pressure between the latter and the emery disc.

The initial temperature of the sparks is primarily influenced by the cutting capacity and speed of the emery disc, and only secondarily by the kind of iron to be ground.

When observing an extensive spark ray as produced by soft steel, it is seen to form a perfectly smooth luminous line, the end of which assumes the shape of an elongated drop. The latter is of a bright, or white heat, and, on closer examination, is found to be widened at its pointed, dark-red end into a second drop, of far smaller dimensions. At the broadest and most highly incandescent part of the first drop, a ramification into a bundle, shown in Fig. 1, attended by explosion, is observed. Now this ramification is variable from one kind of iron to another, and is found to be strictly characteristic of each. This "spark picture", as it is called, therefore, can be used for the analysis of iron and steel.

In the case of carbon contents of 0.07 to 0.08 per cent, two to three spines are seen, the number of the latter increasing as the carbon percentage grows, as shown by Fig. 2. In fact, the number of spines is proportional to the carbon contents of a given steel, and allows the latter to be determined.

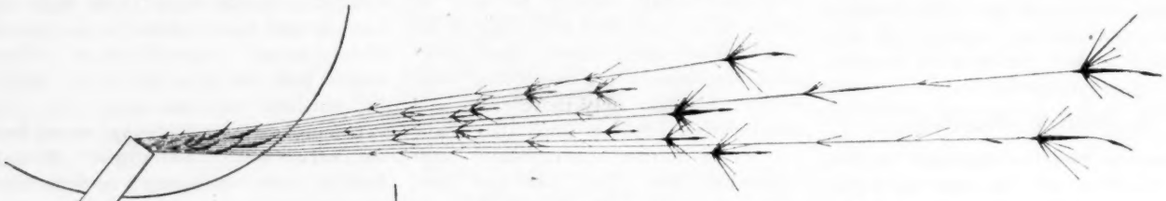


FIG. 1

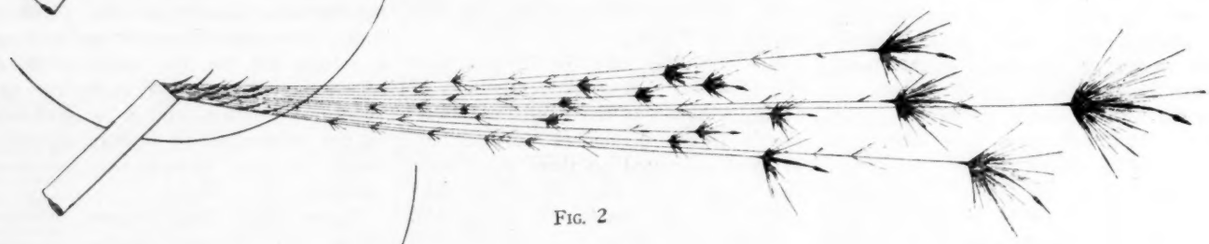


FIG. 2

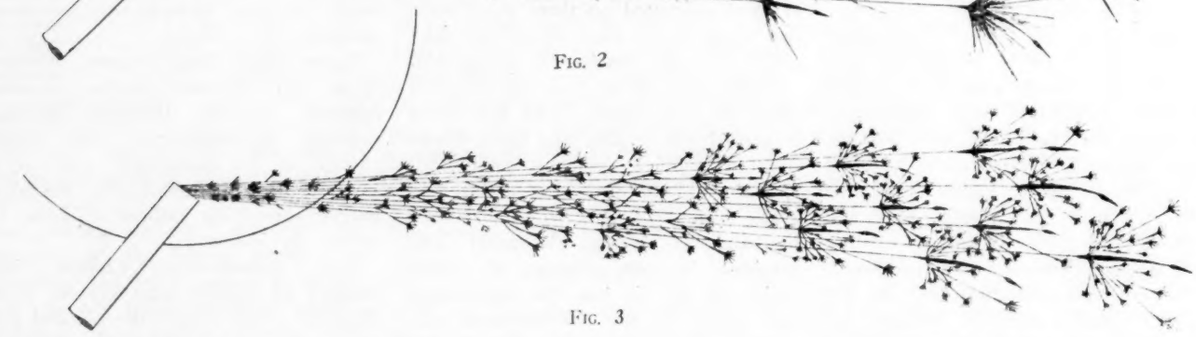


FIG. 3

The spark picture of manganese steel is so characteristic as to permit of no confusion with other steels. Instead of being pointed as in the case of carbon steel, the end of each ramification shows a secondary explosion, a number of short lines gathering, leaf-like, round a common center (Fig. 3). The number and density of the primary ramifications projecting from the drop again is the more important, as the carbon contents of the steel is more considerable. The extent and shape of the widened ends of the primary ramifications in turn seem to be connected with the manganese contents.

In the case of crucible cast steel, the spark picture, shown in Fig. 4, takes the shape of a twig, covered with flowers, each ramification showing, in its turn, a lilac-shaped form. against the emery disc, the picture reproduced in Fig. 5 is observed.

The spark picture of chromium-tungsten steel (high speed steel) is distinguished from that of plain

The spark picture of nickel steel is absolutely identical with that of carbon steel, containing a corresponding percentage of carbon in the case of small nickel contents. However, in

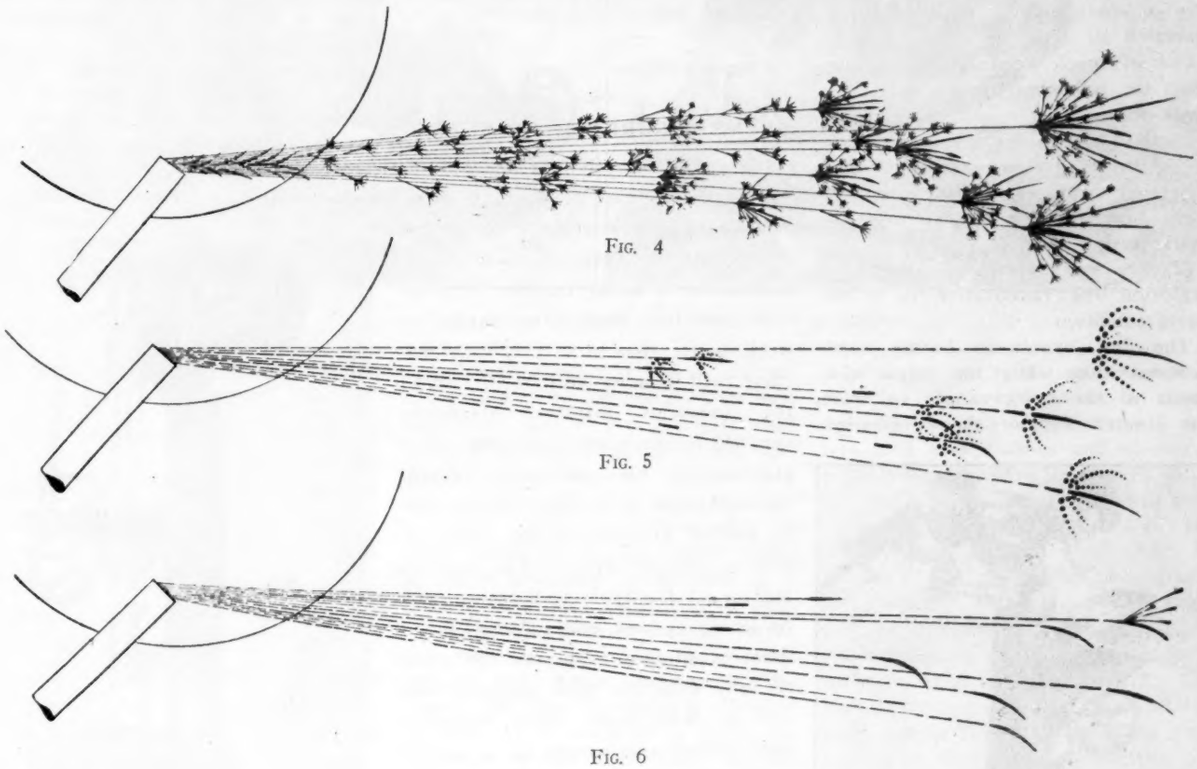


FIG. 4

FIG. 5

FIG. 6

These characteristics allow crucible steel to be readily distinguished from any other kinds.

Nor is the spark picture of tungsten steel less characteristic. The spark rays in this case are dark-red intermittent lines, the ends of which are devoid of any spark bundles if the emery disc be blunt or the pressure between it and the steel insufficient. If, however, the steel be forced under considerable pressure, tungsten steel by the presence of two kinds of rays, that are missing in tungsten steel. The spark pictures of high speed steel are made up only of very short curved drops, while in the case of certain brands, some isolated extensive needles, with club-shaped ends projecting from the center, are observed in addition (Fig. 6). The latter are likely to correspond to some secondary component of the alloy.

the case of higher nickel contents the nickel can be readily recognized by spark analysis as its spark pictures appear only sporadically, while being massed together far more densely in the case of carbon steel.

Cast iron will yield different kinds of spark pictures according to its composition and mainly to its contents of carbon and manganese.

The characteristic spark forms above described thus enable the vari-

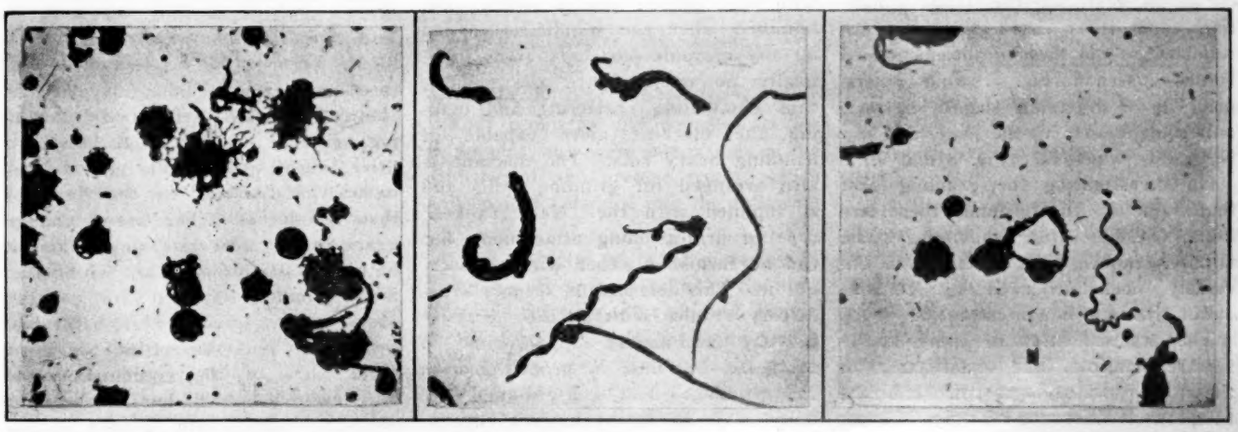


FIG. 7. FIG. 8. FIG. 9.

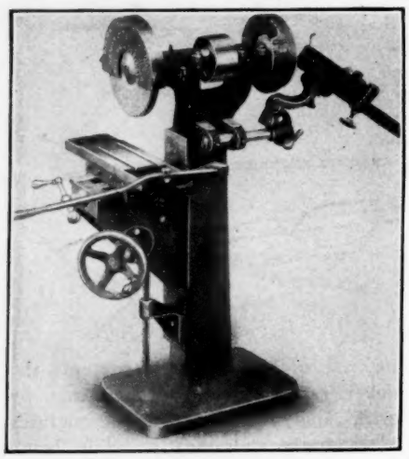
ous grades of iron and steel to be readily recognized and distinguished from one another, while skilled operators can ascertain accurately the carbon contents of analyzed material.

In order to assist the comprehension of spark pictures a plausible explanation of their formation will be found of much help. Bermann suggests the following hypothesis in this connection:

(1) Red-hot sparks are brought to yellow heat at some point in their trajectory and eventually come to white heat, forming by explosion the spark picture.

(2) The spark at the moment of its explosion and ramification is in the liquid condition.

The first hypothesis hardly needs demonstration while the liquid condition of the spark cannot be taken for granted without closer investigation. If, however, a glass plate be introduced at right angles to the direction of the flying sparks, it will be covered with extinguished sparks; microscopical investigation then shows that some of the sparks have reached the glass plate in the liquid condition, and there have become consolidated or splashed in the most varied forms, as seen in Fig. 7, while others, made up of differently shaped shavings, only cling loosely to the plate, and can be readily wiped off (Fig. 8 and 9.)



New Surface Grinder: Wilmarth & Morman Co., Grand Rapids.

On investigating the grinding dust that falls to the ground, there are found besides iron shavings, some minute, smooth balls which have obviously been produced by consolidation from a liquid condition.

The practical uses of spark analysis are manifold. The sensitiveness of the novel process is so remarkable as to allow a difference of only 0.04 per cent of carbon to be readily ascertained. On the other hand, it affords an extremely simple and rapid means of checking chemical analysis of the carbon contents of steel.

Differences in chemical composition in different parts of iron products and completed objects and structural parts are safely ascertained by the aid of the spark process.

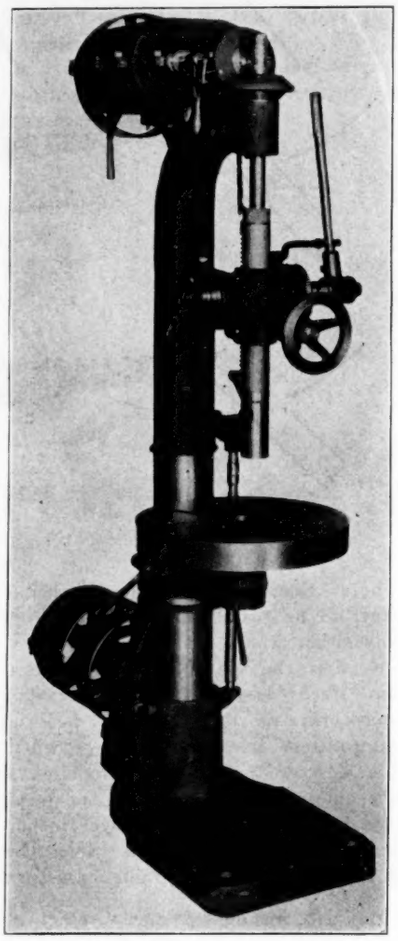
A NEW SURFACE GRINDER.

There has recently been placed on the market by the Wilmarth & Morman Co., Grand Rapids, Mich., a new surface grinder, designed to meet the demand for a handy machine of moderate capacity. Many firms having no work larger than a 6 x 12-inch machine will handle, hesitate to install the inaccurate machines frequently supplied for such small capacity. It is claimed for the machine illustrated herewith, that it provides for as nearly perfect grinding as the most expensive grinder made. The working surface of the table is 6 inches wide by 12 inches long, and sufficient movement is allowed to permit the wheel to fully clear the table on both sides and at both ends. Both transverse and vertical adjustments are graduated by thousandths of an inch, which are sufficiently coarse to allow of easy subdivision if greater refinement is desired.

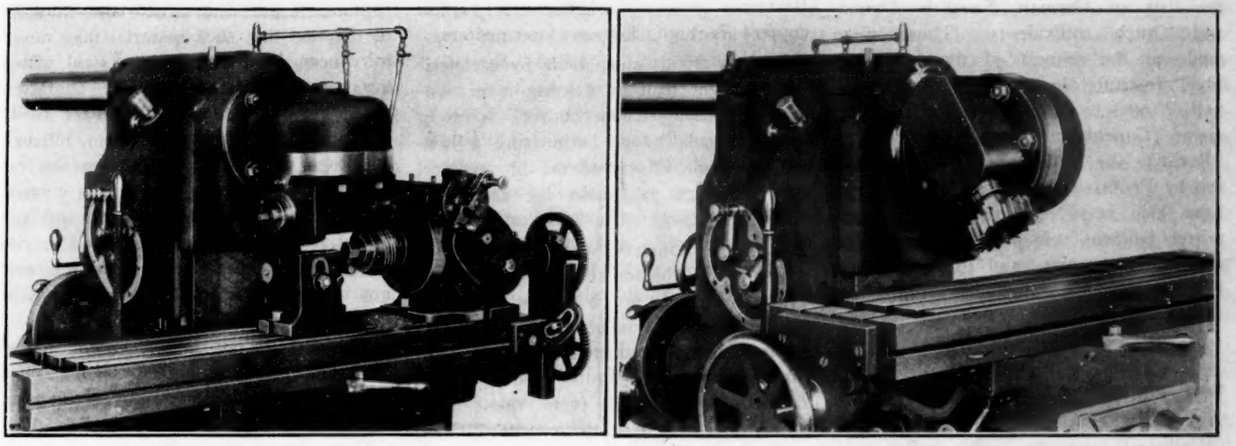
The machine is regularly equipped with a grinding wheel of 12-inch diameter and one-inch face, designed to run at a speed of 1,400 revolutions per minute. Vertical adjustment is made by a screw, as shown, and the table is carried by the familiar knee-and-saddle construction, with ample bearings to give rigidity. The bearings for the spindle, being integral with the column, give a solidity not obtained when the spindle is carried by any movable part. There is practically no overhang to the spindle, thus eliminating chattering and making the machine more capable of handling heavy cuts. The machine is also arranged for grinding drills and is supplied with the "New Yankee" type of drill-grinding attachment, but can be furnished either with or without it. This attachment secures satisfactory results without the necessity of any preliminary adjustments to bring the drill into the proper position for grinding. The drill-grinding capacity may be varied to suit the requirements of any individual shop.

A NEW SIBLEY HIGH SPEED DRILL.

The new high speed drill brought out by the Sibley Machine Tool Co., South Bend, Ind., and illustrated herewith, was designed more particularly to meet the requirements of the automobile trade. It has some new features in upright drills, the most prominent of which is the speed change box located on top of the column, which eliminates cone pulleys with all their disadvantages, and permits of eight changes of speed so arranged that any is instantly available without any shifting of belts. It has ample power to drive high speed drills up to 1½ inches in diameter to the limit of their endurance. The speed change gears in the gear box run in an oil bath, and all bearings are of bronze. The spindle is fitted for No. 4 Morse taper and has ball-thrust bearings. The illustration shows a front view of the combined wheel and lever feed drill, but the machine is also made with geared power feed when required.



Sibley High Speed Drill.



KEARNEY & TRECKER CO. UNIVERSAL MILLING ATTACHMENT.

A NEW UNIVERSAL MILLING ATTACHMENT.

We illustrate herewith a convenient milling attachment made by the Kearney & Trecker Co., Milwaukee, Wis., and designed for use on their milling machines. The illustrations show very clearly the method of attaching to the machine and the infinite variety of positions to which it is capable of being adjusted. There are few shops that do not at one time or another have to deal with a complicated piece of work which taxes to the utmost, if it does not entirely baffle, the ingenuity of its best mechanics, and it was for just such cases that this attachment was designed. It is intended to meet not only the unusual and occasional job but the common and every-day as well. There is no conceivable angle at which it cannot be set, and it is claimed that the construction is such as to enable it to withstand severe and continual use. Like the vertical spindle and other attachments designed for the Kearney & Trecker machine, it is secured in place by clamping to the knee slide on the column and can be set up or removed entirely. As can be seen, a clutch drive is provided for arbors and cutters, and also draw-in and discharge rod. The taper hole is No. 10 B. & S. The drive is through a spur gear carried by the flanged end of the main spindle through bevel gears to a wide faced pinion on the attachment spindle. Spirals of any angle can be cut on both universal and plain machines, if the latter are fitted with universal dividing centers. The manufacturers say that the attachment can be used for face milling with cutters up to 6 inches diameter.

THE UNIFORM NOMENCLATURE OF IRON AND STEEL[1]

Development of the Movement for Standard Definitions and Classification

The first report of this committee was presented at the congress held in Brussels in September, 1906. It consisted of four parts: 1. A polyglot giving the names of the chief classes of iron and steel in English, French, German, Swedish and Danish; 2. English definitions of the principal classes of iron and steel; 3. A glossary of special sizes and shapes of iron and steel and 4, a note on the boundary between steel and cast iron.

The report was accepted by the congress and your committee was instructed to continue their work. It was also suggested that Italian and Spanish equivalents be included in the polyglot and that opinions be secured as to the work of the committee from the following societies:

Association des Ingenieurs sortis de l'Ecole des Mines de Liege.

The Iron and Steel Institute.

Le Comté des Forges de France:

The American Institute of Mining Engineers.

Verein Deutscher Hüttenleute.

Jern Kontoret.

Editors of the *Technolexicon*.

Your committee has complied as far as possible with these instructions in the drawing of the present report, which will be found divided into the following parts:

1. A polyglot giving the names in English, French, Italian, Spanish, German, Swedish, Danish and Dutch, of the chief classes of iron and steel.

2. English definitions of the principal classes of iron and steel and of the microscopical constituents of these metals.

3. A glossary of special sizes and shapes of iron and steel.

4. Opinions of societies.

I. Polyglot, in English, French, Italian, Spanish, German, Swedish, Danish and Dutch, of the chief Classes of Iron and Steel.

This is not intended to be complete, but rather to include only those varieties which are of interest to the association.

The Italian equivalents added to the present polyglot were furnished to the Iron and Steel Institute by F. B. Rognetta (Rome), by Dr. V. Sevieri (Piombino), by the Societa Siderurgica di Savona, and by Peter A. Jackson (Stabilimento Armstrong, Pozzuoli). The Spanish equivalents were kindly furnished by Colonel Cubillo (Trubia).

Many additions have been made to

[1]Report of Committee 24 at International Association for Testing Materials Fifth Congress, Copenhagen. 1909.

the lists of German, Swedish, Danish and Dutch equivalents. These were made at the request of the Iron and Steel Institute, by the editor of *Stahl und Eisen*, by Professor J. H. Hannover (Copenhagen), by J. L. Terneden (Berlin), by Paul Zetzsche (Libau) and by Professor Wedding. A few names have also been corrected. Your committee believes this polyglot now to be sufficiently complete and to contain but few orthographic or other errors.

II. Definitions.

ALLOY CAST IRONS, those which owe their properties chiefly to the presence of an element (or elements) other than carbon.

ALLOY STEELS, those which owe their properties chiefly to the presence of an element (or elements) other than carbon.

BASIC PIG IRON. In America, pig iron containing so little silicon and sulphur that it is suited for easy conversion into steel by the basic open-hearth process. It is restricted to pig iron containing not more than 1 per cent of silicon.

In England and on the continent, pig iron containing so little silicon and sulphur that it can be converted into steel easily by the basic Bessemer or basic open-hearth process. It generally contains 1 per cent or more of manganese and 1.50 to 3 per cent of phosphorus, silicon averaging not more than 1 per cent and sulphur 0.10 per cent. Other varieties treated by the basic Bessemer or basic open-hearth process are not regarded as basic pig, but simply as phosphoric pig.[1]

BESSEMER PIG IRON, that which contains so little phosphorus and sulphur that it can be used by itself for conversion into steel by the original or acid Bessemer process. In America this term is restricted to pig iron containing not more than 0.10 per cent of phosphorus.

In England this term is restricted to pig iron containing not more than 0.06 per cent of phosphorus or sulphur.

BLOWN METAL, the red short metal by purifying pig iron in the Bessemer converter without subsequently removing the oxygen which it absorbs during that purification.

BESSEMER STEEL, steel made by the Bessemer process, whether its carbon content is high, low or intermediate.

BLISTER STEEL, steel made by carburizing wrought iron by heating it in contact with carbonaceous matter. It might also be made by so carburizing a low-carbon steel. Much of the blister steel of commerce is made by cementing Swedish wrought iron in charcoal.

Certain comments, *e. g.*, that on the definition of "blister steel," that it would facilitate fraud, are based on error as to the true function of definition, to express briefly the meaning of a word, and to set up the limits which separate the thing described from those with which it is likely to be confused. That protection against fraud is not to be demanded by definitions is seen clearly on considering the definition in common use. Would it be wise, even if it were possible, that the definition of "horse" should exclude undesirable horses, *e. g.*, the blind, lame, vicious and diseased? Are they not horses, bad ones, but still horses?

In fact no one of our definitions should or would offer the least obstacle to fraud. It would not be proper to define blister steel in such a way as to exclude that made from puddled iron or from phosphoric or sulphurous iron, whether puddled or made in the charcoal hearth. But even if one should go to that length, or the still more absurd length of defining blister steel as "Swedish bar iron subjected to the process of cementation in charcoal," and thereby excluding all French, German and American blister steel, that would not prevent fraud. The unscrupulous could make Swedish bar iron rich in phosphorus or sulphur; or convert Swedish muck bar; or offer improperly or insufficiently cemented steel; or scraps and crop ends of such steel. The proper protection against fraud lies either in buying from those whose character is in itself a guarantee, or else in relying on specifications incorporated in the contract of purchase.

But though the proposition to restrict the meaning of "blister steel" so as to exclude all but that made from Swedish bar iron, or otherwise to exclude any steel which has the carbon-content of blister steel and is made by cementing any wrought iron, pure or impure, in any carburizing material, solid, liquid or gaseous, seems to us hardly open to discussion, yet the further question whether the presence of blisters is essential to blister steel is one on which opinions may reasonably differ. To us it seems that, just as cast iron properly includes all very highly carburized iron, *e. g.*, that made by cementing wrought iron until it contains 4 per cent of carbon, in spite of the fact that such material may never have been cast, so Bessemer steel which has been carburized by the cementation process ought to be called "blister steel" in spite of its freedom from blisters. In other words, in our opinion the essential quality of cast iron is its composition and not its being cast, and the essential quality of blister steel is its composition, caused by cementation, and not its blisters. On this point the opinion of members is requested.

We add to our definition the assertion that much of the blister steel of commerce is made by cementing Swedish wrought iron in charcoal.

CAST IRON, Generally, iron containing so much carbon or its equivalent that it is not usefully malleable at any temperature. Specifically, cast iron in the form of casting other than pigs, or remelted cast iron suitable for casting into such castings, as distinguished from pig iron, *i. e.*, cast iron in pigs etc. (See pig iron). For instance, cast iron pigs, *i. e.*, pig iron, like lead in pigs, *i. e.*, pig lead, is re-melted and cast into castings, such as columns, locks, gears, etc., of special shape suited to their special purpose; these are specifically called "cast iron," and this is the usual restricted meaning of "cast iron" in trade language.

The committee recommends drawing the line between cast iron and steel at 2.20 per cent carbon for the reason that this appears from the results of Carpenter and Keeling to be the critical percentage of carbon corresponding to the point "*a*" in the diagrams of Roberts-Austen and Roozeboom. As to the signification of this critical point the committee is not prepared to express an opinion.[1]

CAST STEEL, in the iron trade means "crucible steel". Obsolescent and undesirable because it might easily be understood to include other steels which have been cast.[2]

CEMENTED STEEL, the same as blister steel.

---

[1]This paragraph was inserted at the suggestion of C. H. Ridsdale. That this is the accepted meaning of basic pig iron in England is also stated by J. E. Stead. Prof. H. Wedding likewise wrote:

Basic pig iron in America is quite different from that in Germany. In Germany basic pig iron and Thomas pig iron (Thomasroheisen) have the same signification. In America the term is restricted to pig iron containing not more than 1 per cent of silicon, without regard to the percentage of phosphorus, but the German (Thomasroheisen) must contain more than 1½ per cent of phosphorus, and in reality contains less than 0.5 per cent of silicon.

[1]Prof. Wedding reports that in Germany every metallic product of the blast furnace is called pig iron or cast iron, and appears to dissent from drawing any line between cast iron and steel. Mr. Brinell thinks that 2.20 per cent of carbon is a rather high limit for practical purposes.

J. E. Stead thinks it "inadvisable to place the dividing line at such a low percentage as 2.2 per cent".

[2]This modification of the definition of cast steel as it appeared in our first report is based on one suggested by C. H. Ridsdale, who further argues that the meaning of the term should be so restricted as to apply only to "steel cast into shape as contra-distinct to rolled or forged, etc." While this would be a desirable restriction it would be contrary to the generally accepted meaning of the terms and the obvious duty of this committee is evidently to record and describe as faithfully as possible the current significations attached to the various terms rather than to attempt an abritrary improvement of the nomenclature.

CHARCOAL HEARTH Cast Iron, cast iron which has had its silicon and usually its phosphorus removed in the charcoal hearth, but still contains so much carbon as to be distinctly cast iron.

CONVERTED STEEL, the same as blister steel.

CRUCIBLE STEEL, steel made by the crucible process, whether its carbon content is high, low or intermediate.

GRAY PIG IRON and GRAY CAST IRON, pig iron and cast iron in the fracture of which the iron itself is nearly or quite concealed by graphite, so that the fracture has the gray color of graphite.

HEMATITE PIG IRON, originally pig iron made from the hematite ores of England, which happen to be so free from phosphorus and sulphur that the pig iron made from them can be used by itself for the acid Bessemer process. By association it has come to mean any pig iron thus relatively free from phosphorus and sulphur. The term is not used in America, and is undesirable.

HOT METAL OR DIRECT METAL, the molten cast iron from the blast furnace before it has been allowed to solidify. The term is generally applied to molten metal taken direct from the blast furnaces to the steel-making plant.

INGOT IRON, steel cast into an initially malleable mass and containing so little carbon or its equivalent that it does not harden greatly when cooled suddenly and completely from a red heat. The word is rarely used in English, but "mild steel" or "low carbon steel" or "soft steel" is generally used in its place. In America the line between soft steel and half-hard steel is usually drawn at a carbon content of about 0.20 per cent.[1]

INGOT STEEL, steel cast into an initially malleable mass and containing so much carbon or its equivalent that it hardens greatly on sudden cooling. The word is rarely used in English, but "hard steel", "high-carbon steel" or "half-hard steel" are used in its place.

MALLEABLE CASTINGS, castings of malleable cast iron, which see.

MALLEABLE CAST IRON, iron which, when first made is cast in the condition of cast iron, and is made malleable by subsequent treatment without fusion.

Although the English name of this variety suggests that it is cast iron, it is not truly a variety of cast iron, but rather forms an independent species of iron, because it lacks the essential property of cast iron, viz., its extreme brittleness. Though the term "malleable castings" is very common, the term "malleable cast iron" is very rarely used. The common, but inexcusable term we regret to say is "malleable," pronounced "mallable," used as a substantive. Those with some respect for their mother tongue, if asked of what material a malleable casting was composed, would generally use a circumlocution.

MALLEABLE IRON, the same as wrought iron. Used in Great Britain, but not in the United States, except carelessly as meaning "malleable cast iron" (vulgar "malleable").

MALLEABLE PIG IRON, an American trade name for the pig iron suitable for converting into malleable castings through the process of melting, treating when molten, casting in a brittle state, and then making malleable without remelting. The term should be used with care to avoid confusion. This material is also called in trade in America "malleable iron" but this use should be avoided, because "malleable iron" has the older and (in Great Britain) firmly established meaning of "wrought iron".

MOTTLED PIG IRON and MOTTLED CAST IRON, pig iron and cast iron the structure of which is mottled, with white parts in which no graphite is seen, and gray parts in which graphite is seen.

OPEN HEARTH STEEL, steel made by the open hearth process, whether its carbon content is high, low or intermediate.

PIG IRON, cast iron which has been cast into pigs direct from the blast furnace. This name is also applied loosely to molten cast iron which is about to be so cast into pigs or is in a condition in which it could readily be cast into pigs.

PLATE IRON, a name sometimes applied in Great Britain to refined cast iron.

PUDDLED IRON, wrought iron made by the puddling process.

PUDDLED STEEL, steel made by the puddling process, and necessarily slag-bearing. (See Weld Steel.) It differs from wrought iron only in being richer in carbon. It differs from most other steels in containing much cinder.

REFINED CAST IRON, cast iron which has had most of its silicon removed in the refinery furnace, but still contains so much carbon as to be distinctly cast iron.

SHEAR STEEL, steel, usually in the form of bars, made from blister steel by shearing it into short lengths, piling and welding these by rolling or hammering them at a welding heat. If this process of shearing, piling, etc., is repeated, the product is called "double shear steel."

STEEL, iron which is usefully malleable at least in some one range of temperature, and in addition is either (*a*) cast into an initially malleable mass; or (*b*) is capable of hardening greatly by sudden cooling; or (*c*) is both so cast and so capable of hardening. Variety A includes also molten iron which if cast would be malleable, as do its two sub-varieties, "ingot-iron" and "ingot steel". (Tungsten steel is malleable only when red-hot.)[2]

STEEL CAST, (adjective), consisting of solid Bessemer, open hearth, crucible or other slagless steel, and neither forged nor rolled; applied to steel castings. For instance, a "steel cast" gun is a gun which is a steel casting, *i. e.*, which has been neither forged nor rolled. To call it a "cast steel" gun would imply that it was made of crucible steel, to which the term "cast steel" is restricted.

STEEL CASTINGS, unforged and unrolled castings made of Bessemer, open hearth, crucible or any other steel. Ingots and pigs are in a sense castings; the term "steel castings" is used in a more restricted sense, excluding ingots and pigs and including only specially shaped castings, such as are generally used without forging or rolling. They may, however, later be forged, *e. g.*, under the drop press, when they cease to be "castings" and become "drop forgings", or if only part is forged then they are partly forgings and partly castings.

WASHED METAL, cast iron from which most of the silicon and phosphorus have been removed by the rich ferruginous slags of the Bell-Krupp process or its equivalent without removing much of the carbon, so that it still contains enough carbon to be classed as cast iron. The name "washed metal" is extended to cover this product even if its carbon is somewhat below the proper limit for cast iron.

WELD IRON, the same as wrought iron. Obsolescent and needless.

WELD STEEL, iron containing sufficient carbon to be capable of hardening greatly by sudden cooling, and in addition slag-bearing because made by welding together pasty particles of metal in a bath of slag, as in puddling, and not later freed from that slag by melting. The term is rarely used.

WHITE PIG IRON, and White Cast

[1] C. H. Ridsdale advises adding after the last word: "in Great Britain at a carbon content of from 0.10 per cent to 0.15 per cent."

[2] Alexander Pourcel writes that he agrees with the classification of iron and steel presented by Mr. Greiner at the meeting of the association held in Paris in 1900. "Irons are", Mr. Greiner said, "distinguished from steels simply by the process of manufacture. Thus, all malleable cast metal is steel; all malleable metal not cast is wrought iron. There are to be distinguished 1. pig iron, cast metal non malleable; 2. wrought iron, malleable metal not cast; and 3. steel cast and malleable metal." A serious, if not fatal objection to this classification is that, according to it, what has hitherto been called blister steel becomes wrought iron.

Iron, pig iron and cast iron in the fracture of which little or no graphite is visible, so that their fracture is silvery and white.

WROUGHT IRON, slag-bearing, malleable iron, which does not harden materially when suddenly cooled.

WROUGHT STEEL, the same as weld steel. Rarely used.

Definitions of the Microscopical Constituents (Metarals) of Iron and Steel.

The definitions are based on the known and usually indisputable properties of the several constituents, and not on their nature or constitution, which are still in dispute and likely to remain so for sometime, because of the complexity of their genesis and the imperfection and obscurity of our evidence. But we supplement the definitions with a brief statement of the more important present opinions as to the constitution of these constituents.

In this connection the chairman of this committee suggests the word "metaral", the analogue of "mineral", as the equivalent of the bulky term "microscroscopical constituents". It is more accurate than "microscopical constituent," because these substances are often far from "microscopical, *e. g.*, the graphite of pig iron and the primary cementite of ferro manganese. Moreover "constituent" seems vague. Occluded gas and dissolved iron oxide are surely constituents but hardly "metarals", just as the carbonic acid dissolved in mineral water, though a constituent is not itself a distinct mineral when so dissolved.

Pure and commercial carbon steel consist normally when in region IV (see Fig. 1) of (1) austenite, and when in region IX of (2) ferrite and (3) cementite, partly (and in case of eutectoid steel wholly) intermixed mechanically as (4) pearlite. In changing in cooling from austenite into ferrite and cementite the metal passes successively through the stages of (5) martensite, (6) troostite and (7) sorbite, and it passes back in the reverse order through those stages in changing back from ferrite and cementite into austenite on heating.[1] Though stages 5, 6 and 7 thus seem to have no region in which they exist normally and in equilibrium, but at most a mathematical line, they may be preserved through lag by sudden cooling, and so may austenite under favorable conditions. Moreover, the presence of considerable quantities of carbon, manganese, and nickel both lower the boundaries between regions IV and IX, and increase the lag, in both ways facilitating the retention of austenite and martensite in the cold, in extreme cases lowering these boundaries to below the atmospheric temperature, and perhaps expanding the mathematical line at which martensite is normal into a region covering many degrees of temperature.

(Continued in next issue.)

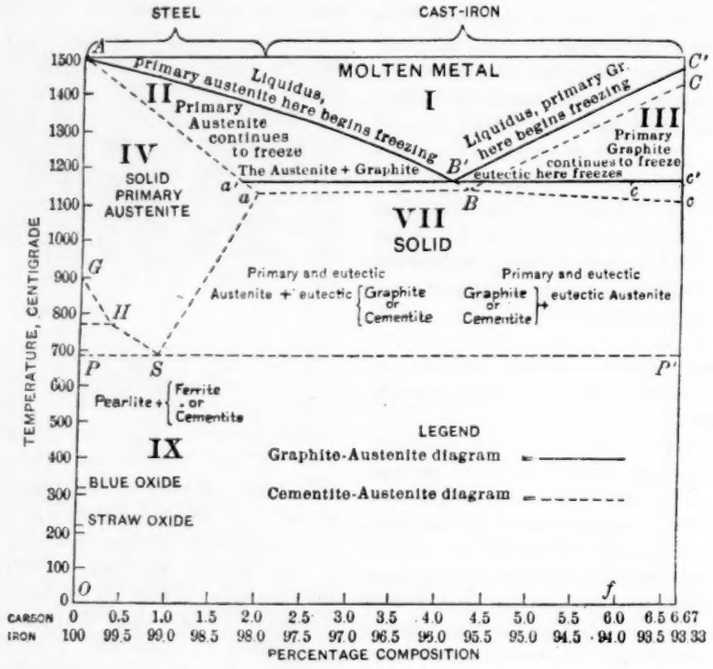


FIG. 1—ROBERTS-AUSTIN DIAGRAM

[1]Other transition constituents, *e. g.*, osmondite and troosto-sorbite (stages intermediate between troostite and sorbite,) have been described by some writers, but the committee believes that these terms, which at most represent constituents of only hypothetical existence, are neither needed nor used enough to justify giving them a place in this list of definitions.

HEAT TRANSMISSION.

In a paper on "Heat Transmission," read before the Institution of Mechanical Engineers, at London, Oct. 15, the author, Prof. W. E. Dalby, of London, attempts a general review of what has been done relating to the transmission of heat across boiler heating surfaces. The paper is principally a compilation of abstracts of over 500 papers relating to the subject, as the author frankly states in his introduction. Of the 66 pages comprising the work, 37 are devoted to references upon which the article is based.

The paper covers, in a general way, the transmission of heat by radiation, conduction and convection, and treats briefly, the various factors affecting each method, citing in instances, the results obtained from experiments.

In his conclusion, the author states that in view of the vast amount of work that has already been done in the subject, there scarcely seems any necessity for further research in this direction. However, as means are now at hand for accurately measuring temperatures at different parts of a boiler directly, the writer suggests that a research be undertaken by the institution, in which steam boilers of different types working under practical conditions be made the subject of experiments in which all the elements of their operation be measured, together with the temperatures, for the purpose of establishing the temperature gradient at different parts of the heating surface.

NEW PUBLICATIONS.

THE PRODUCTION OF IRON ORES, PIG IRON AND STEEL, IN 1908.—By E. C. Harder; with a "Note on the Value of Pig Iron in 1908," by W. T. Thom; advance chapter from mineral resources of the United States for calendar year 1908; Washington, U. S. Geological Survey.

THE PRODUCTION OF GLASS SAND, OTHER SAND, AND GRAVEL, IN 1908.—By Ernest F. Burchard; advance chapter from mineral resources of the United States for calendar year 1908; Washington, U. S. Geological Survey.

THE PRODUCTION OF ANTIMONY, ARSENIC, BISMUTH, SELENIUM AND TELLURIUM IN 1908.—By Frank L. Hess; advance chapter from mineral resources of the United States; Washington, U. S. Geological Survey.

STATISTICS OF THE CLAY WORKING INDUSTRIES IN THE UNITED STATES.—By Jefferson Middleton; advance chapter from mineral resources of the United States; Washington, U. S. Geological Survey.

ADVANCE SHEETS, SHOWING DETAILS OF IMPORTS AND EXPORTS FOR AUGUST, 1909.—Washington, Bureau of Statistics, Department of Commerce and Labor.

NEWS FROM MANY INDUSTRIES

(In order to assist the post offices in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

The following manufacturing concerns have filed articles of incorporation:

The Cream City Foundry Co., Milwaukee; $20,000; by Joseph Foertsch, Frank Tisbacek and others.

The Milwaukee Concrete Mixer & Machinery Co., Milwaukee; $25,000; by W. J. Roseberg, R. J. Schwab and Henry E. Schwab.

The Euclid Crane & Hoist Co., Euclid, O.; $10,000; by G. A. Armington, G. A. Robinsette, James A. Fry, O. F. Downs and J. E. Yaggi.

The Foster Bolt & Nut Mfg. Co., Cleveland, $150,000; by T. P. Linn, D. N. Postilwaite, S. P. Outhwaite, E. Bragumer and C. M. Voorhees.

The Pittsburg Iron Mining Co., Philadelphia; iron, iron ore and metal products; $500,000; by F. R. Hansel, George H. B. Martin, and S. C. Seymour.

The Leber Mfg. Co., Cleveland; machinery; $15,000; by George J. Leber, William V. Groff, G. J. Allmendinger, F. William Woesner and Victor C. Lynch.

The Carper Foundry & Machine Co., Beckley, W. Va.; works at Cabell, Raleigh county; $25,000; by A. L. Carper, Wickham; T. H. Wickham, I. C. Prince, Chistopher McTaggart, Beckley, W. Va.; and W. C. Caperton, Slab Fork, W. Va.

The Lakeside Forge & Wrench Co., Erie, Pa.; $300,000; by Charles R. Dinkey, James McBrier, and C. M. Conrad, Erie, Pa.; Eugene Childs, Fred E. Sands, Boston; Arthur D. Dana, New York City; and J. O. Whitaker, Chicago.

The Auto Cycle Co., Salem, O.; $100,000; by H. M. Silver, A. O. Silver, E. W. Silver, H. C. Grouchild, R. W. Campbell.

The Joliet Bridge & Iron Co., Memphis, Tenn.; $10,000; structural iron; by R. C. Morrison, J. A. McCann, George A. Larimer and others.

The Craven Foundry & Machine Co., Newbern, N. C.; $100,000; by W. T. Brinson and others.

Priest Machine Works, Oklahoma City, Okla.; $6,000; by Charles E. Hoyland, John B. Priest and others.

The Columbia Novelty Mfg. Co., St. Louis; $10,000; dies, tools, etc.; by Grover C. Graham, Willard H. Graham, George and David T. Graham.

The Milwaukee Metallic Packing Co., Milwaukee; $5,000; by Martin Brusard, Edwin F. Casper and L. Casper.

The Boston & Alton Copper Co., Boston; $3,000,000; by Edwin F. Gen, John C. Gilpin and R. J. Kensley, of Philadelphia; John Davidson, of Rutledge, Pa., and S. F. Glen, of Camden, N. J.

The United Electric Co., Canton, O.; $200,000; by Edward A. Langenbach, G. L. Goughnour, W. W. Irwin, A. O. Dillon and Harry R. Jones.

The Lees-Bradner Co., Cleveland; machinery; $10,000; by E. J. Lees, H. T. Bradner, F. B. Williams, C. C. Wise and I. B. Graham.

The Buckeye Machine Die & Tool Co., Cleveland; $10,000; by J. Horn, J. H. Horn, L. F. Patek, Martin Ulmo and Pauline Horn.

New Construction:—

The Harlan & Hollingsworth Co. is receiving estimates on a concrete steel building 173 x 300 feet for its Wilmington, Del., plant.

A new building of the Standard Chain Co., at York, Pa., is nearing completion and will be occupied soon. It will be 58 x 290 feet.

R. W. Schoenfelt has about completed a foundry at Williamsburg, Pa., and expects to be turning out various lines of castings about the first of the month.

The Pullman Company, Chicago, has taken out a building permit for the construction of a 1-story brick manufacturing building on Cottage Grove avenue, to cost $50,000.

Johnston & Jennings Co., Chicago, has taken out a building permit to build a 1-story brick foundry at 1720-28 Elston avenue, estimated to cost $30,000.

The Marion Malleable Iron Works, Marion, Ind., is arranging to build a one-story pattern vault 50 x 100 feet of brick, iron and concrete throughout.

The Consolidated Press & Tool Co., Hastings, Mich., is building an addition to its plant, 36 x 42 feet for a store room, and is also installing a large planer.

The Windsor Machine Co., Rutland, Vt., has had plans prepared for a building 130 x 540 feet, on which it is expected that work will be begun next spring.

The Lumen Bearing Co., Buffalo, N. Y., has taken out a building permit to construct a one-story brick and steel foundry at 1155 Sycamore street, to cost $4,000.

The Barney & Smith Car Co., Dayton, advises respecting the erection of an addition for handling steel interior finish for passenger cars, that the building is completed and the machinery is now being installed.

A. H. Yocum Co., Oakbrook, Pa., is completing the building of a foundry, and a cupola and brass furnace are now being installed. It is expected that the plant will be operating within two weeks.

The Bridgeport Hydraulic Co., Bridgeport, Conn., is having plans prepared for a machine shop and laboratory, of brick, steel and reinforced concrete, 30 x 60 feet.

Work has been started on an addition to the foundry of Louis Sacks, Newark, N. J., estimated to cost $15,000. The plans include a three-story brick storage building 37 x 110 feet, and a one-story core and carpenter shop, 20 x 80 feet.

The Milwaukee Car Mfg. Co., Milwaukee, Wis., advises that it expects to put up an addition to its erecting shop 80 x 240 feet. Further, that it will not need additional machinery of any kind, as it has ample facilities in the balance of the plant.

The Ottumwa Boiler Co., Ottumwa, Ia., is making improvements about its plant in order to increase its output made necessary by the increased business. The roof is being raised and new runways are being constructed.

The increase of capital stock of the Savage Machine Co., Freeport, Ill., to $25,000, has been made for the purpose of building a factory and installing machinery. Most of the company's work has heretofore been done outside.

Work has been started on the extension of the Gadsden Car Works, Gadsden, Ala., the foundation for the new car shops having been started. The extensions will cost probably $30,000, and the new work will be pushed along with all possible haste.

The Spears Axle Co. is hurrying the construction of its new plant at Warwood, near Wheeling, W. Va., in the endeavor to get the building under roof and some machinery installed by the first of the year. The

company will use its Twenty-seventh street location as a store room.

The De Soto Foundry & Machine Co., Mansfield, La., has awarded contracts for the construction of a Tropenas steel plant. It will erect a frame building 60 x 120 feet, to cost $6,000, including core ovens, etc. The cost of the entire equipment is placed at $25,000.

The Michigan Malleable Iron Co., Detroit, advises that its annealing room was entirely destroyed by fire Oct. 15. While the loss was heavy, yet it managed to start its plant on Oct. 25. It is now rebuilding the annealing room and the dimensions of the building will be the same as formerly.

Kraeuter & Co., Inc., Newark, N. J., whose plant was recently damaged by fire, advise that they have contracted for a reinforced concrete drop shop 40 x 125 feet, fireproof. The machine shop will be rebuilt along the line of the old shop. Plans are out also for a proposed four-story reinforced concrete building, 34 x 125 feet.

The Buckeye Traction Ditcher Co., Findlay, O., advises that it has contracted for a building 120 x 300 feet, of steel and brick construction throughout. The center bay will be equipped with a 20-ton electric crane with a 56-foot 8-inch span, and the side bays of the building with 4-ton hand cranes. The company advises that it will probably require some electric equipment, an air compressor and minor material.

Clement Bush, Quincy, Ill., iron and brass founder, whose plant was recently damaged by fire, advises that he is rebuilding the wheel shop department, and plans in the near future to erect a brick and concrete building one story, about 70 x 100 feet. As to equipment, Mr. Bush advises further that it has been found advisable to build the machines at his own shops, and that no doubt this plan will be continued for the new shop.

The Bullard Machine Co., Bridgeport, Conn., advises respecting new construction, that it is erecting a structure 56 x 142 feet, having a crane section of 38 feet span and 24 feet under the hook. The building is constructed to relieve the congestion in the manufacturing departments and to centralize the receipt of raw material. It will not be used for manufacturing, but will contain no equipment other than the crane and handling facilities for castings and raw material.

The Southern Machinery & Mfg. Co., Charlotte, N. C., whose incorporation was recently noted, has begun the construction of a concrete machine shop, 30 x 75 feet, and will hurry along the construction of the other six departments as rapidly as possible. It plans to occupy a portion of the plant by the middle of November. The officers of the company are: President, Thomas B. Lee; vice president, W. B. Wilcox; secretary-treasurer, A. M. Webb.

General Industrial:—

The Toledo Motor Co., Toledo, O., has increased its capital from $10,000 to $2,000,000.

The Atlas Machine Co., Louisville, Ky., has increased its capital from $25,000 to $50,000.

The Union Iron Works, of Erie, Pa., has increased its capital stock from $100,000 to $300,000.

The Miami Valley Machine Co., Dayton, O., Frank Shuey proprietor, has assigned to J. A. Kauffman, former county auditor.

The Hooven, Owens & Rentschler Co., Hamilton, O., recently turned out the largest casting in its history. It weighed 80 tons, and will be part of a tandem compound Corliss engine that is being made for the Clairton plant of the Carnegie Steel Co.

The Tennessee Coal, Iron & Railroad Co. has purchased from David R. Burgess, R. D. Banks and Julian W. Whitney a square mile of land near Dolomite, Ala., for $125,000, or at the rate of $390.62 an acre.

The plant at Chester, Pa., of the Solid Steel Casting Co. will be offered at public sale by W. B. Harvey, the receiver, Nov. 9, at 2 p. m. The sale will include the real estate and the personal property.

J. H. Ryan and E. M. Boland, doing business as the Model Brass Foundry, 1212 Race street, Cincinnati, have assigned to Attorney William Thorndyke. The assets are estimated at $3,500 and the liabilities at $4,000.

The United States Malleable Iron Co., of Toledo, has increased its capital stock from $100,000 to $150,000. It is building additions which will increase its output about 70 per cent. All material has been purchased and the work will be completed Nov. 15.

The largest cast iron pipe ever made in a Kansas foundry has been cast at the plant of the Hutchinson Foundry & Machine Works, of Hutchinson, Kans. The pipe is 18 inches in diameter, and will be used in a suction line at the salt plant of the Carey Salt Co., at Hutchinson, Kans.

The Schafer Mfg. Co., Birmingham, Ala., has purchased the McCuen Iron Co.'s plant, which includes boiler shops and structural steel shops. The announcement is made that the McCuen plant will be consolidated with the Schafer works, of which John B. Schafer is president. The Schafer company manufactures transmission machinery.

The McAllister-Byrnes Construction Co., Girard, O., successor to the Ohio Boiler Co., recently organized by electing these officers: President, E. H. Lotze; vice president and manager, John H. Byrnes; treasurer, H. McAllister; secretary, W. R. Phibbs; assistant treasurer, Washington Hyde. These officers comprise the new directorate.

J. S. Cullinan, of Corsicana, Tex., E. G. Wright, of Pittsburg, and C. H. Todd, of Washington, Pa., as partners of the Petroleum Iron Works, have transferred their plant at Washington, Pa., to the newly incorporated Petroleum Iron Works Co., of Washington, Pa. Two other directors of the new corporation are A. W. Krouse and C. S. Richie, of Washington, Pa.

The Crow Wing Iron Co. at its annual meeting at Cloquet, Minn., reelected the following officers and directors: President, J. C. Campbell; vice president, John Long; secretary, Fred D. Vibert; treasurer, O. W. Erickson; Louis McCullough, J. A. McDevitt and W. G. Dolan. The reports of the officers show that the affairs of the company are prosperous. Its holdings are iron ore lands on the Cayuna range, near Deerwood.

The Baker Machine Co. has been organized to take over the business of the William H. Baker Iron Works, East Trenton, N. J., making boilers, fire escapes and machine and engine repair parts. The new corporation has a capital stock of $50,000. The incorporators include Edward S. Parkinson, Nicholas Snyder, Charles Matthews, Israel Bates and Charles M. Gedney, all of Trenton, and the Industrial Engineering Co., of Philadelphia.

Fires:—

The plant of the American Tool Co., St. Joseph, Mich., was badly damaged Oct. 22. The loss on building, machinery, etc., is estimated at $15,000, partially covered by insurance.

The foundry and machine shops of the Gurney-Tilden Co., Hamilton, Ont., were damaged Oct. 19.

The loss on the plant of the Federal Tool & Supply Co., Alton, Ill., which was damaged Oct. 16, is placed at $20,000 and the insurance at $16,000.